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STUDIES IN VIOLA.—I.

Proposed Segregates of Viola.

BY J. A. NIEUWLAND AND R. M. KACZMAREK.

The presence or absence of cleistogamous flowers in plants has become more and more recognized as a basic character for classification. The genus *Crocanthemum* of Spach,[1] lately recognized[2] by Dr. Britton as the name applicable to our American Rock Roses or Frostweeds has as perhaps its most important character of distinction from *Halimium* and *Helianthemum*, the presence of the less conspicuous cleistogamous flowers. In a closely allied family, the *Violaceae*, in the genus *Viola*, these flowers serve no unimportant part in differentiating species from one another. As the presence or absence of them seems to be a constant character in the plants mentioned we can see no reason why further segregation of the old aggregate genus *Viola* may not be suggested with reason, all the more as there are very important characters of cleistogamous flowers, and the habit of the plants in question demands serious consideration of the matter. In fact Spach and others before and after him without reference to presence of cleistogamous flowers thought the various groups now aggregated under *Viola* as sufficiently different from one another to constitute natural genera. Even before Linnaeus and by some after him, the Pansies were grouped by themselves. As already intimated in a former article by one of us[3] not only are these flowers present constantly in some groups with other important differential characters, and absent in others, but when present, there are

1 Spach, E., Am. Sci. Nat. II. 6, p. 370, (1836); also Hist. Nat. Veg. VI., p. 95, (1838).

2 Britton, N. L., Ill. Fl. N. U. S. II., p. 539, (1913).

3 Nieuwland, J. A., Am. Mid. Nat. III., 3, p. 85–91. (p. 90).

important characters of distinction in these cleistogamous flowers themselves.

During the past season particularly, and in fact for nearly a decade past, this interest in the apetalous flowers was maintained by us. Though not a great number of individual species has as yet been examined, in every one of the groups it has been found that *e. g.*, acaulescent violets including, the white violets such as *V. lanceolata*, *V. primulaefolia*, *V. blanda*, *V. incognita*, have uniformly, as far as examination of their cleistogamous flowers was made, two fertile stamens, with occasionally the presence of a very small abortive petal or two, as in case of *V. cucullata*. The solitary abortive petal is usually the keel, or lower petal. The other petals and stamens are represented if at all as minute processes like small stiped capitate glands, found in their regular positions with respect to the more or less equal sepals.

The caulescent violets represent three groups. The pansies which are annuals, biennials or winter annuals, have no cleistogamous flowers. *Viola eriocarpa* Schwein (*Viola scabriuscula* Schwein) and *Viola pubescens* Ait., have subequal sepals and only two stamens in their apetalous summer flowers. *Viola canadensis* Linn., *Viola rostrata* Pursh, *Viola striata* Ait., have five fertile stamens in their cleistogamous flowers. The first of these does not produce these flowers until very late in the season and then the transition from petaliferous to apetalous ones is a rather gradual process. The petals become gradually smaller and finally disappear completely, one or several at a time. The sepals are short and seem to be open when the capsule is fertilized. Even late in fall there may often be found what seem to be cleistogamous flowers with one to several minute whitish petals. In fact the budlike closed cleistogamous flowers of this species do not seem to be as fertile as they are in the rest of the violets, and appear to fall off aborted before producing seed. They are reproduced at the end of the shoots and are short-stalked apical and sometimes in old leaf axils.

The cleistogamous flowers of *Viola rostrata* are among the first to appear and continue to develop until winter. The sepals are at first and before fertilization somewhat unequal. The peduncle is not bent and this is the case in all the plants of the caulescent group. The stamens are five in number. They grow usually from the ends of the stems which do not elongate much;

they are at first rather long and slender peduncled and become shorter late in season. The apetalous flowers are not produced by transition from the petaliferous ones but appear immediately in their characteristic form.

Viola striata Ait., resembles the preceeding in the number of stamens. The sepals have long auricles that are characteristic of the plant. The sepals are very unequal, the inner being much shorter than the two or three outer ones. The transition to cleistogamous flowers is rather more gradual but not so much so as in *V. canadensis* Linn. The styles and stigmas of the caulescent cleistogamous flowers are usually nearly straight somewhat expanded above or but very little reflexed.

Viola pedata Linn., stands in a class by itself as having no cleistogamous flowers. The following key shows the relationship of the proposed segregates. No species will be transferred by us unless such as we have examined and the number of stamens determined. Moreover, no species will be mentioned in *Viola* proper unless this fact of the presence of two stamens has been determined.

KEY TO GENERA AND SUBGENERA

A. Plants acaulescent, the leaves and flowers of both kinds either directly from rootstock or runners.
  (a) Cleistogamous flowers none.....Genus **Oionychion** (type *V. pedata* Linn.)
  (a) Cleistogamous flowers present in summer after the vernal petaliferous ones.....Genus **Viola** (type *V. odorata* Linn.)
    (b) Rootstock thick, plants with stolons, petals blue, the lateral bearded.....Subgenus **Euion** (type *V. odorata*).
    (b) Rootstock thick, plants without stolons, petals blue,[1] the lateral bearded.....Subgenus **Hesperion** (type *V. palmata*).
    (b) Rootstocks, slender, plants from and with stolons, petals white or pale lilac.[2].....Subgenus. **Verbasculum** [old Genus] (type *V. primulaefolia* Linn.)

A. Plants caulescent, flowers axillary.
  (a) Cleistogamous flowers present appearing after the petaliferous later in the season. Plants perennial.
    (b) Stamens of the cleistogamous flowers two, petaliferous flowers yellow.....Genus **Crocion** (type *V. pubescens* Ait.)
    (b) Stamens of the cleistogamous flowers five, petaliferous flowers white, purplish or blue..Genus **Lophion** (type *V. canadensis* Linn.)

1 White in *Viola candidula*.

2 *Viola rotundifolia* Michx. with yellow flowers may perhaps form another subgenus.

(c) Lower petal spurred, flowers violet blue. Style not capitate. . Subgenus **Eucentrion** (type *V. rostrata*) Pursh.
(c(Lower petal not spurred, flowers not blue, white within, base yellow. Style capitate. Subgenus **Eulophion** (type *V. canadensis* Linn.)
(c) Lower petal spurred. Flowers white or cream colored. Style not capitate Subgenus **Rhabdotion** (type *V.striata* Ait.)
(a) Cleistogamous flowers absent. Plants annual or biennial Genus **Mnemion**[1] (type *V. tricolor* Linn.)

Onionychion Gen. Nov. Viola Linn. pro parte.

Planta acaulescens ramulos stoloniferos carens, radicibus fibrosis rhizomate praemorso, carnoso, erecto, brevi, vel cormo elongato, stricte simplice nunquam ramoso; floribus cleistogamis nullis, vernalibus autem magnis purpureis; foliis vernalibus parvis, subpedate 5-9-partitis, laciniis latioribus; aestivis vero linearibus longioribus et angustioribus cum pedunculo flores multo excedente, 4-angulato. Stamina cum appendicibus magnis, antheris sessilibus, bina inferiora caudata, inferius obtuse plus minusve calcaratum. Petala non barbata. Stylus clavatus erostratus, apice oblique concavus, cum stigmate in tuberculo parvo, quod eodem medio apice concavo inclusum est.

Acaulescent stolonless plants with fibrous roots without aestival cleistogamous flowers and with large showy purplish vernal ones. Rootstocks short, premose, erect, or elongate corm-like, unbranching. Leaves of two kinds, small early ones broad-lobed less dissected. Orange stamen tips large, or obovate, anthers sessile the two lower with a curved projection into the more or less saccate spur. Style club-shaped, beakless, obliquely concave at the summit. Stigma within a small protuberance near centre of cavity. Petals all beardless entire. Peduncles somewhat 4-angled much longer than leaves.

Oionychion pedatum (Linn.) Comb. Nov.
Viola pedata Linn. Sp. Pl. p. 933, (1753).

Oionychion pedatum var. **inornatum** (Greene).
Viola pedata var. *inornata* Greene Pitt. III., p. 35, (1896).

1 The name *Ion*. Medicus Malv. p. 102, (1787), is probably only a synonym for the Linnaean *Viola*, and not meant as a segregate of the pansies from the genus. The name was a synonym before Linnaeus and is but the literal Greek translation of the Latin Viola. *Ion arvense* would be less appropriate than *Mnemion arvense*. We therefore reject the name in favor of the later *Mnemion* Spach.

Oionychion pedatum var. **ampliatum** (Greene).

Viola ampliata Greene. Leaflets Bot. Obs. Crit. I, p. 3, (1903).

The habit of these plants and their petaliferous flowers as well as lack of cleistogamous flowers, and peculiar structure and shape of stigma and style, even the cormlike erect rhizome which never branches, together with the other characters mentioned mark these plants as very distinctly different from any of the other violets. The habit of these plants could perhaps be more considered as that of a perennial stemless pansy, than a violet proper. The absence of cleistogamous flowers emphasizes this so much that the earlier botanists before Linnaeus referred the plant called *Viola pedata* Linn., to *Viola tricolor*, or a stemless pansy, calling it "*Viola tricolor, caule nudo foliis tenuius dissectis*"[4] or "*Viola virginiana, foliis multifidis cauliculo aphyllo.*"[5]

The name *Oionychion* comes from the Greek words οἰωνὸς, bird, ὄνυξ, ὄνυχος, claw, ἴον, violet.

VIOLA (Vergil, Pliny) Linn. Sp. Pl. p. 933, (1753).

Subgenus EUION.

VIOLA ODORATA (Tragus) Linn., Sp. Pl. p. 934, (1753).

Viola purpurea Pliny, Hist. Nat. XXI.: 6, also Ruellius, Nat. Stirp. 633, 49, (1543), etc., etc.

Viola martia Gall. ex. Ruellio l. c.

Viola nigra Vergil 4: 120; also Brunfels, Herb. Viv. Ic. p. 137, (1530).

Viola officinarum Ruppius.

We have not been able to secure good cleistogamous flowers of this plant for study.

Subgenus HESPERION

VIOLA FIMBRIATULA J. E. Smith in Rees' Cyclop. Vol. 37, No. 16, (1817).

Viola ovata Nutt. Gen. Vol .I.: 148, (1818).

Viola sagittata var. *ovata* T. and G. Fl. N. A. Vol. I. p 133, (1838.)

The auricles of the sepals of the apetalous flowers are as long almost as in *V. cucullata*. Specimens from Mineral Springs (Porter Co.), Ind., were examined. Flowers sometimes especially late in season have a small spatulate whitish or bluish keel petal and one or two small abortive lateral petals. Stamens two. Once

4 Banist, J., in Ray. J. Hist. Pl. II. p. 1928, (1688).

5 Plukenett, L., Alm. p. 388, t, 114. f. 7, (1696).

only was one found that had a third subabortive stamen with only one anther that appeared fertile. This anther being the only one found of many examined, it was thought to be a case of teratology.

VIOLA CUCULLATA Ait. Hort. Kew. 3 p. 228, (1789).

Though the cleistogamous flowers very often have one to three petals, never have more than two fertile stamens been found. The keel petal is spatulate bluish, larger than in the two preceeding, the lateral always linear though often expanded slightly at the colored tip. The cleistogamous flowers have long auricles and not infrequently a stiped aborted ovary is found within the mature fertile one arising from the middle of the torus.

VIOLA VARIABILIS Greene.

Cleistogamous flowers on prostrate branches purplish, auricles very short, fruit ovoid or obovoid, stamens two.

The earliest leaves are reniform crenate and vary to such as our palmately dissected into linear branching lobes. Stamens often with four anthers seldom three, one of which may be aborted.

VIOLA PALMATA Linn. Sp. Pl. p. 933, (1753).

Specimens from woods S. E. of Notre Dame were examined. It grows with *V. variabilis* Greene and *V. populifolia* Greene.

The summer flowers always have but two stamens. In shape these resemble those of the cleistogamous flowers of the preceding.

VIOLA POPULIFOLIA Greene. Pitt. Vol. III. p. 337, (1896–1898).

Cleistogamous flowers were collected and examined from St. Mary's ravine, Notre Dame, Ind. and Studebaker's woods, South Bend. Examinations in the field were made in the aforesaid places. The plant is very common and produces prostrate cleistogamous flowers sometimes subterranean or at least under leaves and decaying vegetative matter. All the flowers were found to have invariably two fertile stamens.

VIOLA PAPILIONACEA. Pursh. Pl. Am. Sept, Vol. I. 173, (1814).

Plants growing on the edge of the water line of an "Ox-bow-loop" of the St. Joseph River near St. Mary's academy were examined. The plants at high water mark are not infrequently

submerged early in spring and accordingly bloom later, while the flowers are paler often lilac or lavender colored. The stamens of the cleistogamous flowers are two always. Other flowers from plants near Terre Coupée showed similar characters.

VIOLA CUSPIDATA Greene, l.c. Vol. III., Pitt. p. 314, (1896–1898).

Cleistogamous flowers have never been found to have more than two stamens. Rather common plant in the woods of our region. More material of this plant was collected and examined than of any other violet here noted.

VIOLA AFFINIS Le Conte Ann. Lyc. N. York, II. p. 138, (1828).

Cleistogamous flowers of plants from Four Mile Bridge north of Notre Dame were examined. The stamens are always two.

VIOLA CANDIDULA Nwd. Am. Mid. Nat. III., No. 4. p. 85 (1913)

For details of apetalous flowers consult reference cited. Stamens never more than two. The supposed abortive stamen mentioned on page 91 is really the keel or lower petal as elsewhere noted.

VIOLA SAGITTATA Ait. Hort. Kew. 3 p. 287, (1789).

Specimens from Webster's crossing (two separate localities) were examined. The plants invariably have cleistogamous flowers with only two stamens. The cleistogamous flowers of *V. sagittata* are characterized by the long auricles of the sepals almost as in *V. cucullata*. The flowers are at first strictly erect on erect peduncles but about the time of fertilization become recurved, and at the time of dehiscence become again erect.

Subgenus *VERBASCULUM* (Genus of the ancients.)

VIOLA LANCEOLATA Linn. Sp. Pl. p. 934 (1753).

Flowers from plants were examined from various places. Those collected in Brookland, D. C. in summer had but two stamens. Plants collected early in the season at Crumstown and Webster's Crossing, north of Notre Dame, had no trace of petals. From the same place in fall as also from Mineral Springs, the lower petal and traces of lateral petals were sometimes found. Pollen tubes were found in this species as also in *V. primulaefolia* Linn.

VIOLA PRIMULAEFOLIA Linn. Sp. Pl. p. 934, (1753).

Plants were collected in the summer of 1913 near a spring

not far from Terra Cotta, D. C. A considerable amount of cleistogamous flowering material was examined at the time and some preserved for histological study. The stamens were invariably only two.

VIOLA INCOGNITA Brainerd.

Specimens examined both from Mineral Springs (Porter Co.) in fall and from Crumstown, Ind. (St. Joseph Co.) The cleistogamous flowers have short auricles. The stamens are always two only. The keel petal is sometimes present as a spatulate semimembranous growth. The capsules and sepals are mostly purplish dotted especially late in season.

VIOLA PALLENS (Banks) Brainerd. Rhodora 7, p. 247, (1905).

Specimens of cleistogamous flowers from Crumstown invariably have but two stamens. No petals were found. Plants at Mineral Springs agree in this respect.

Crocion Nov. Gen.

Type Species *Crocion pubescens* or *Viola pubescens* Ait. Hort. Kew. ed. I., Vol. III., p. 290, (1789).

Plantae caulescentes rhizomate carnoso foliis cordatis vel reniformibus, crenulatis vel dentatis, bracteolis perparvis, petalis flavis striatis, lateralibus quidem barbatis; appendicibus antherarum ovalibus; sepalis quinque, subinaequalibus auriculatis, staminibus quinque subsessilibus, binis inferioribus calcaratis, ovario oblongo vel ovali subtriangulari; staminibus florum cleistogamorum binis tantum, petalis parvis aliquando praesentibus spatulatis vel linearibus.

Caulescent plants not much branched with fleshy rhizomes; leaves cordate or reniform crenulate usually not numerous, the upper short and stalked, the lower with long petioles especially the radical ones; stipules not much dentate or entire bractlets very small. Petals yellow, striate with dark veins, stamen appendages orange oval. Sepals five somewhat unequal slightly auricled. Stamens five subsessile, the two lower slightly spurred. Ovary oblong or oval somewhat triangular. Stamens of the cleistogamous flowers two only with rarely an abortive third. One to three abortive petlas often present. The lower spatulate or linear, the lateral linear petals flat.

Crocion eriocarpum (Schwein) Nov. Comb.

Viola eriocarpa Schwein. Am. Jr. Sci. 5. p. 75, (1822).

Viola pubescens var. *scabriuscula* T. & G. Fl. N. Am. 1, p. 142, (1838).

Viola scabriuscula Schwein Britton and Brown Ill. Fl. 2, p. 453, (1897).

Though this and the following violet are caulescent, and the stemmed violets have ordinarily five perfect stamens in their cleistogamous flowers, these so called yellow violets have only two. One or two extra abortive stamens are not unfrequently found but not more than two perfect ones with both anthers.

In a single instance was a third stamen found with an anther having a few pollen grains and the other anther aborted to a capitate gland. The lower petal and one or two lateral ones are occasionally met with.

Crocion pubescens (Ait.) Nov. Comb.

Viola pubescens Ait. Hort. Kew. 3, p. 290, (1789).

Principally because of this remarkable difference in the number of the stamens of the yellow caulescent violets are they here segregated. Though the number of stamens in the cleistogamous flowers of *Chrysion biflorum* (Linn.) Spach could not be studied we can not refer the American plants to Spach's genus where they might be thought to belong by habit and other characters. There are, however, differences warranting their being taken out of this genus and put in a new one. More detailed study of the cleistogamous flowers of all the violets alone can decide the standing of those. The stamens in *Crocion pubescens* are only two!

LOPHION Spach, Hist. Nat. Veg. V. p. 516, (1836).

Viola Linn. l. c. seg.

The cleistogamous flowers of Lophion in the division *Eulophion* do not appear immediately after the season of flowering of the other violets but are a gradual evolution of the spring petaliferous ones. The petals become smaller and finally disappear leaving occasionally only the lower petal, sometimes two lateral ones and often all are wanting. Many of the cleistogamous flowers are abortive, *stamens are always five*, fertile, spatulate, with the terminal appendage shaped nearly as in those of the other groups. Plants of the group of *V. rostrata* cease to bloom soon and produce cleistogamous flowers all the rest of the year until snowfall.

Type *Viola canadensis* Linn.

EULOPHION.

LOPHION CANADENSE Spach, l. c. p. 517.

Viola canadensis Linn. Sp. Pl. p. 936, (1753).

The sepals of the cleistogamous flowers are rather unequal usually, the inner being shorter, all at first firmly pressed against the ovary and stigma, later after fetilization open early, especially at the tips, leaving the apex of the ovary exposed while the five stamens and the petals fall off. Petals which are usually greater, in number (often five), and larger comparably than in the other violets, are not uncommonly present. It is therefore quite inappropriate to call these aestival flowers apetalous, and more correct to call them cleistogamous.

Subgenus **Eucentrion.**

Lophion rostratum (Push.) Nov. comb.

Viola rostrata Pursh, Pl. Am. Sept. p. 174, (1814).

Cleistogamous fruit subglobose obtusely triangular, the carpels broadly carinate, with a slight small channel like depression running from base to apex. Style rather long, recurved at the apex. Sepals subequal lanceolate, glabrous with a rounded short auricle. Later flowers sometimes possessing 1—several lanceolate petals about ¼ the length of the free upper end of the sepals. Stamens 5 spoon-shaped, spatulate, fruit and ovaries erect on their peduncles, produced at the ends of the branches all summer and fall until winter.

Subgenus **Rhabdotion.**

Lophion striatum (Ait.) Nov. comb.

Viola striata Ait. Hort. Kew. 3, p. 290, (1789).

Cleistogamous flowers somewhat erect on their peduncles, *with five stamens;* these flowers sometimes with small or abortive petals in transition early in summer. Transition flowers fewer and stages more abrupt; sepals rather long very unequal, the outer longest, linear lanceolate with appendages at insertion giving them a hastate to sagittate appearance, these small appendages are wanting in the inner sepals. Sepals ciliate on margin with long, broad, spreading auricles erose-ciliate, at the free end somewhat pubescent. Style and stigma short closely appressed by the 5 imbricate stamens. Petals in the later summer cleistogamous flowers mostly absent. The anthers of all the cleistogamous flowers of violets are with scarcely any exceptions *two only, instead of four, seldom three!*

MNEMION Spach Hist. Nat. Veg. 5, 510, (1836).

Sufficiently important diagnosis will be seen to be included in the key to the genera at the beginning of this study.

MNEMION TRICOLOR Spach. Hist. Nat. Veg. 5 p. 515, (1836).
Viola tricolor Dodonaeus, Coron. p. 17, (1568). Pempt, p. 158, (1583) also Linnaeus Sp. Pl. p. 935, (1753).

Mnemion arvense (Murray) Nov. Comb.
Viola arvensis Murray, Prodr. Stirp. Goett. p. 73, (1770).

Mnemion Rafinesquii (Greene) Nov. comb.
Viola tenella Muhl. Cat. 26, (1813). Not Poiret (1810).
Viola Rafinesquii Greene, Pitt. IV. p. 9, (1899).

In conclusion we feel that the characters of the cleistogamous flowers of the plants known as violets seem sufficient to warrant the segregation suggested. We have refrained, however, from making any transfers of the numerous species of the groups because we were unable to examine the flowers of them all. We have reason to feel confident that the event may more than prove the suggestion here outlined, and should this be the case the study of violets by their cleistogamous flowers will further the knowledge thereof, and give us at least a very good means of distinguishing the groups.

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NOTES ON OUR LOCAL PLANTS.—V.

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Subclass 2. DICOTYLEDONEAE.

D. C. Syst. I., (1818), also Prodr. I., p. 1, (1824).

Dicotyledones Haller Enum. Pl. p. XXI., (1753); also Boerhaave Index. Pl. Alt. 2, p. 171, (1727.)

Order 15. PIPERINAE.

Bartling, Ord. Nat. p. 83, (1830).

Piperales Engl. Syllab. p. 93, (1892), also Engler and Prantl. Pflanzenfam. Nachtr. p. 345, (1897).

Family 37. **SAURUREAE** Rich. Anal. (1808), Bartling, l. c. p. 84, also Lindley, Int. Veg. Syst. p. 172, (1830).

SAURURUS Plumier, Nov. Gen. p. 51, (1703); also Linn. Hort. Cliff. p. 139, (1737), Gen. Pl. p. 108; (1737), p. 159, (1754), Gronovius, Fl. Virg. p. 40, (1739).

Saururus cernuus Linn., Sp. Pl. p. 34, (1753).

Lake Maxinkuckee (Marshall Co.) [H. W. Clarke.] (Marshall Co.) [Hessler], Tamarack (Porter Co.) [Deam], I have found the plant to be abundant in all the countries in the range of this report; notably at Millers and Dune Park (Lake Co.); Tamarack, Mineral Springs, (Porter Co.); Laporte, Michigan City, Sagunay, Smith, Grand Beach (Laporte Co.); in numerous places in St. Joseph Co.; Southeast of Granger and along the rivers in Elkhart Co.; New Buffalo, Stephensville, St. Joseph, Benton Harbor, Galien, Niles, Baroda, Berrien Springs, Munich, Scottdale, Twin Springs, etc. (Berrien Co., Mich.); Bankson Lake, (Van Buren Co., Mich.)

Nos. 10412 Hudson Lake (Laporte Co.), 10436 and 1835 Notre Dame, 1910 Webster's Crossing, (St. Joseph Co.) U. N. D. Herbarium.

Order 16. JUGLANDALES.

Engl. Syllab. ed. 1, p. 93, (1892).

Family 38. **NUCIFERAE**, Ray, Meth. Pl. p. 36, (1682), also Syn. Meth. Britt., p. 438, (1724).

Juglandeae DC., Theor. Elem., p. 213, (1813); *Juglandceae* Lindley, Nat. Syst., ed. 2, p. 180, (1836).

Nuculaceae Lam. and DC. ex Dum. Fl. Belg. Stam. p. 15 (1827).

JUGLANS Fuchs, Stirp. Hist. p. 215, (1549), (1542?).

Nux Juglans Pliny. and of many of the pre-Linnaean writers. *Nux* Tour. Els. p. 452 (1694), I. R. H. p. 581 (1700).

Juglans Linn. Gen. p. 291, (1737), p. 460, (1742).

JUGLANS Linn., Gen. p. 431, (1754).

Juglans nigra (P. Hermann) Linn., Sp. Pl. p. 997, (1753).

Nux juglans Virginiana nigra, P. Hermann, Hort. Lugd., p. 453, (1683).

Lake Maxinkuckee (Marshall Co.) [H. W. Clarke]. Nos. 446 and 466 St. Joseph, Mich., also 3270 from near the same place. I have found the tree also in St. Joseph, Laporte, Porter, Berrien, and Van Buren Cos. It is rapidly disappearing and very few large specimens are now to be found. Not much effort is made to plant the tree or protect young specimens, though the tree grows well and propagates fast from seed. It does not find favor as a shade

tree in cultivation as it should and like the butternut is at times afflicted by caterpillars to such an extent as be deprived of its leaves almost entirely. Some years ago trees were cut down in a neighboring city because these caterpillars were found to be strewn on sidewalks and falling from the branches on people passing by. Within a few years even medium sized trees will be very rare in our region. Fifty years ago trees were cut down and used for fuel, so great was their abundance in St. Joseph County.

Juglans cinerea Linn., Sp. Pl. 2nd ed., p. 1415, (1763).

Lake Maxinkuckee (H. W. Clarke); Mineral Springs (Deam). No. 10414 Hudson Lake, U. N. D. Herbarium. Rather more common than the preceding as it is not as useful or valuable for lumber. I have found it quite abundant in all the counties.

HICORIA Raf. Alsog. Amer. p. 65, (1838) changed from the earlier *Hicorius* Raf. Fl. Lud. or p. 109 (1817). *Scorius* Raf. Med. Rep. N. Y. 5, p. 352 (1808). Probably a misprint for *Hicorius Carya* Nuttall, Gen. p. 220 (1818) not *Caryon* of the Greeks,—*Juglans regia*: Linn. *Hickorea* Le Conte, Proc. Acad. Phil p. 402, (1850).

Section EUCARYA DC. in Prod. XVI., 2, p. 142,(1864).

Hicoria ovata (Mihl.) Britton, Bull. Torr. Bot. Cl. 15, p. 283, (1888).

Juglans ovata Miller, Gard. Dict ed. 8, No. 6, (1768).

Carya alba Nuttall, Gen. 2, p. 221, (1818), not *Juglans alba* Linn.

Lake Maxinkuckee (H. W. Clarke, Nos. 2144, 2167, Notre Dame, 2109, 2107, 2110, 9021, 90021, 2144A, Rum Villge, south of South Bend, 2110x and 2108, from the same place are quite typical. The others have nuts with thinner husk. The nut itself has a very thin shell and is not notably angled. It may prove a separate variety.

Hicoria laciniosa (Michx. f.) Sarg. Mem. Tour. Bot. Cl. 5, p. 354, (1894).

Carya sulcata Nuttall, Gen. 2, op. 221, (1818 not *Juglans sulcata* Willd.

Juglans laciniosa Michx. f. Arb. Am. 1, p. 109, pl. 8 (1810); *Hicoria sulcata* Britton, Mem. Torr. Bot. Cl. 15, p. 283, (1888).

Nos. 2167½, 2173, 2167, Notre Dame, along the St. Joseph River. Becoming scarce.

Hicoria alba (Linn.) Britton, Bull. Torr. Bot. Cl. 15, p. 283, (1888).

Juglans alba Linn., Sp. Pl. p. 997, (1753), *Juglans tomentosa* Lam. Encycl. 4, p. 504, (1797). *Carya tomentosa* Nuttall, Gen. 2, p. 221, (1818).

Lake Maxinkuckee (H. W. Clarke); Nos. 10416, 10426, 10428, N. of Hudson Lake.

Section DRIMOCARIA (Raf.), as a sub-genus (?) Alsog. Am. p. 65, (1838).

Hicoria cordiformis (Wang.) Britton, N. Am. Trees, p. 228, (1908).

Hicoria minima Britton, Bull. Torr. Bot. Cl. 15, p. 284, (1888), *Juglans alba minima* Marsh, Arb. Am. p. 68, (1785), *Carya amara* Nutt. Gen. 2, p. 222, (1818).

Drimocaria minima Raf., l. c.

Lake Maxinkuckee (H. W. Clarke); No. 2107a Rum Village, S. of South Bend. I have met it in all the counties in the region.

Hicoria microcarpa (Nutt.) Britton, l. c. p. 283.

Carya microcarpa Nuttall, Gen. 2, p. 221, (1818), *Juglans alba odorata* Marsh, Arb. Am. p. 68, (1785).

Lake Maxinkuckee (H. W. Clarke), No. 10415 N. of Hudson Lake, [Van Buren Co., Mich.] (H. S. Pepoon).

Order 17. MYRICALES.

Engler, in Eng. and Prantl. Pflanzen fam. Nachtr. p. 345, (1897).

Family 39. **MYRICACEAE** Dumortier, Anal. p. 95, (1829).

Myricaceae l. c. p. 12, (1829); *Ceriferae* Tidestrom Elysium Marianum (1910); *Myriceae* L. C. Rich. Anal. Fruit. p. 193, (1808).

COMPTONIA Banks: Gaertner, Fr. and Sem. 2, p. 58, pl. 90, (1791).

Comptonia peregrina (Linn.) Coulter. Mem. Torr. Bot. 5, p. 127, (1894).

Myrica asplenifolia Linn., Sp. Pl. ed. 1, p. 1024. (1753). *Liquidambar asplenifolia* Linn. Sp. Pl. 2, ed. 1418, (1763); *Liquidambar peregrina* Linn. Sp. Pl. p. 999, (1753); *Comptonia asplenifolia* Gaertn. Fr. and Sem. 2, p. 58, (1791).

[Lake Co.] (Hill); Lake Maxinkuckee (H. W. Clarke); Millers (Umbach).

Order 18. SALICINAE.

Bartling, Ord. Nat. Pl. p. 118, (1830).

Salicales Lindley, Nat. Syst. Ed. 2, p. 186, (1836) emend. Engler, Fuhrer. Bot. Gart. Breslau, p. 31, (1886).

Family 40. **SALICINEAE** L. Rich. ex A. Rich
Now. El. Bot.

ed. 4, p. 560, (1828) also Lindley Nat. Syst. p. 98, (1830), p. 96, (1831); *Salicaceae* Lindley, Nat. Syst. ed. 2, p. 186, (1836).

POPULUS Vergil, Ecl. IX; 41, Pliny, XXIV; 8, Horace, Carm. II; 3.

Leuce Theoc., Ed. II., V., 121; Theophrastus, III., 14; Dioscorides, I, 109. *Populus* of all the pre-Linnaean authors without perhaps a single exception. *Populus* Tour., El. p. 465, (1694), I. R. H. p. 592, (1700); *Populus* Linn., Gen. Pl. p. 307, (1737). POPULUS Linn., Gen. Pl., p. 465, (1754); *Populus* Linn., Syst. (1735), Hort. Cliff., p. 460, (1737); *Octima* Raf. Alsog. Am. p. 42, (1838); *Tremula* Dumort., Van Hall, Bijdr. Nat. Wet. 1, p. 46, (1826).

Populus alba Pliny, Nat. Hist., XVI., 23, Horace. Carm. II., 3 Ovid, Epist.

Populus candida Vergil, Ecl. IX., 410, *Populus alba* Dodonaeus, Pempt. p. 835, (1583); Lobelius, Hist. p. 609, (1516), Ruellius, Lonicer, Dalech, Hist. p. 87, (1587), etc., etc.; *Populus alba* Linn., Sp. Pl. p. 1034, (1753).

I have found this tree throughout the region.

Populus bolleana Masters, Gard. Chron. 18, p. 556, f. 96, (1882) *Populus alba bolleana* Masters. l. c.

No. 2467. (Cultivated) Notre Dame. The plant which bears the same relationship to *P. alba* that *P. italica* Moench, the Lombardy poplar bears to *A.* or *P. nigra* Linn., does not spread as rapidly as the common white poplar. It is very susceptible to attacks of "borers" and other animal parasites and can scarcely be said on this account to be quite hardy.

Populus grandidentata Michx., Fl. Bor. Am. p. 243, (1803).

Lake Maxinkuckee (H. W. Clarke); Mineral Springs, (Deam); Nos. 499, 448, 450, Notre Dame; 472, 3349, 3240, St. Joseph, Mich. Observed in all the counties.

Populus tremuloides Michx. l. c.

Lake Maxinkuckee (H. W. Clarke) (Deam), Mineral Springs

(Deam); [Lake Co.] (Deam); Nos. 3325, 3318, St. Joseph, Mich. (Tidestrom); Nos. 811, 2800, Notre Dame; 10367 Chain Lakes (St. Joseph Co.). Observed in all the counties.

Populus heterophylla Linn., Sp. Pl. 1034, (1753).

Aigiros heterophyllos Raf. Alsog. p. 42, (1838).

Lake Maxinkuckee (H. Wl Clarke). Found by Dr. Greene and myself southwest of South Bend in low ground not far from the Sumption Prairie Road. Also in Berrien Co., Mich.

AIGEIROS Homer, Odyss, VII, 106, XVII: 208 Hesiod, Scut. Herc. 377 Theophrastus, III: 14: Dioscorides, 1.: 144.

Populus Vergil, Pliny, Tour., Linnaeus in part *Aigeiros* Tidestrom, Elysium, Mareanum, I., p. 15, (1910) not *Aigiros* Raf. Alsog. Am. p. 42, (1838) = *Populus heterophylla* Linn.

Aigeiros deltoides (Bartr.) Tidestrom. Elysium, Marianum, II. p. 16, (1910).

Populus deltoides Bartr; Marsh., Arb. Am. p. 106, (1785) *Populus canadensis* Moench. Weisents. p. 81, (1785) *Populus marilandica* .Poir. in Lam., Encyc. Suppl. 4: p. 378, (1816)? *Populus monilifera* Ait., Hort. Kew. 3 p. 406, (1789) *Populus angulata* l. c. p. 407, *Populus carolinensis* Moench, Verz. Pl. 81, (1789), *Aigeiros virginiana*. Tm. l. c., *Populus virginiana* Fouger, *Mem. Soc. Ag. Par.* 1786, 87, (1787)

Nos. 3343, 3401, St. Joseph, Mich. (Tidestrom); Lake Maxinkuckee (H. W. Clarke), (Deam); No. 475, St. Joseph, Mich., 450, 11159, Notre Dame. I have seen it in every county.

Aigeiros nigra (Pliny).

Populus nigra Pliny, Nat. Hist. XVII: 23, XVI.: 23, Ruellius Nat. Stirp., p. 277, (1543), also Matthioli, Camerarius, Dodonaeus, Pempt. p. 836, C. Bauhin, Pin. p. 429, Tour. Els. p. 465, (1694), I. R. H. p. 592, (1700), etc., etc. POPULUS NIGRA Linn., Sp. Pl. p. 1034, (1753).

Sometimes cultivated and may escape, though the following which by some is considered but a variety is oftener found.

Aigeiros italica (Duroi) Tm., l. c.

Populus italica Moench, Weisenst. p. 79, (*Populus nigra italica* Duroi, Harbk. Baumz. 2: p. 141, (1772); *Populus pyramidalis* Roz. Cours. d'Agric. 7: p. 619; *Populus dilatata* Ait., Hort. Kew. 3, p. 406.

Found throughout the range, but perhaps always in cultivation or near houses.

Aigeiros candicans (Ait.). *Populus candicans* Ait. Hort. Kew. 3, p. 406, (1789). *Populus balsamifera* var. *candicans* A. Gray, Man. ed. 2, p. 419, (1856).

Found at South Haven by Bailey. I have not found it south of the Michigan boundary line except as one specimen west of South Bend in cultivation in a farm yard. It grows wild near Rochester, Michigan near Detroit, whence I have herbarium specimens collected by myself.

SALIX Vergil, Ecl., II., 83, V: 16, X: 140. Georg., IV: 184, Culex, 54. Pliny, Nat. Hist. XXI: 20.

Itea Homer, Il., §, 350, Odys. K, 510. Theophrastus, III: 13, Dioscorides I: 115. *Siler* Vergil, Georg., II: 12.—*Salix vitellina* Linn. *Salix* Varro, T. Cato. and of all the pre-Linnaean authors none perhaps excepted. *Salix* Tour. Els. p. 464 (1694), I. R. H., p. 580, (1700). Linn., Gen. p. 300, (1737), Syst. (1735). SALIX Linn., Gen. p. 447, (1754). *Amerina* Pliny, XXIV: 9.

Salix vitellina Pliny, XVI: 37, Linn., Sp. Pl. 1442 ed 2, (1763). SALIX ALBA Linn., Sp. Pl. p. 1021, (1753). *Salix perticalis* Columella *Salix candida* Pliny l. c. Ruellius. Nat. Stirp. p. 251, (1543).

St. Joseph, Mich.(Tidestrom): Lake Maxinkuckee (H. W. Clarke). Found in every county.

Salix fragilis Linn., Sp. Pl. p. 1017, (1753).

Lake Maxinkuckee (H. W. Clarke); St. Joseph, Mich., (Tidestrom): Notre Dame, No. 491.

Salix babylonica Linn., Sp. Pl., p. 1017, (1753).

Cultivated and often persisting in places when left to itself.

Salix lucida Muhl., Neue Schrift. Ges. Nat. Fr. Berlin, 4: p. 239, pl. 6, f. 7, (1803).

[Lake Co.] (Hill); Dune Park [Lake Co.] (A. Chase); Clarke, Ind. [Lake Co.] (Umbach); [Laporte Co.] (Deam); Benton Harbor and St. Joseph, Mich., (Tidestrom); No. 484, St. Joseph, Mich.; No. 9150 Notre Dame.

Salix interior Rowlee, Bull. Torr. Bot. Club, 27, p. 253, (1900). *Salix longifolia* Muhl., l. c. p. 238, pl. 6, f. 6. not Lam. (1778).

[Laporte Co.] (Deam); Lake Maxinkuckee (H. W. Clarke); St. Joseph and Benton Harbor, Mich. (Tidestrom); Nos. 213, 491, Notre Dame.

Salix pentandra Linn., Fl. Lapp. p. 370, t. 8, f. 3, (1737); also Sp. Pl. p. 1016, (1753).

No. 10108 Mineral Springs [Porter Co.]; It grows at Notre

Dame near St. Joseph's Lake, but perhaps cultivated, or escaped from plants formerly cultivated.

Salix falcata Pursh Fl. Am. Sept. 2, p. 616, (1814).

Salix nigra Marsh Arb. Am. p. 139, (1785), not *Salix nigra* Pliny and of the pre-Linnaeans.

Dune Park (A. Chase); St. Joseph, Mich. (Tidestrom); Lake Maxinkuckee (H. W. Clarke); No. 465, St. Joseph, Mich.

Salix exigua Nuttall, Sylva 1, 75, (1842).

Salix fluviatilis exigua Sarg. Silva, 9, p. 124, (1846).

Nos. 446, 448, Notre Dame, 445, 803, Webster's Crossing, North of Notre Dame.

Salix cordata Muhl., l. c. p. 236, pl. 6, f. 3.

Salix angustata Pursh l. c. p. 613, *Salix cordata angustata* Anders., Vet. Acad. Handl. 6, 1, p. 159, (1867).

Whiting, Ind. [Lake Co.] (Higdon and Raddin); [Lake Co.] (Hill); Lake Maxinkuckee (H. W. Clarke).

Salix syrticola Fernald, Rhodora 9, 146, (1907).

Salix adenophylla of Am. authors not Hooker, Fl. Bor. Am. 2, p. 146, (1839).

[Lake Co.] (Hill) (Deam); [Porter Co.] (Cowles); Pine, Ind. [Lake Co.] (Umbach); Nos. 2645 Millers, Ind. [Lake Co.], 3348 St. Joseph, Mich. I have found it also in Laporte Co., at Tamarack and Grand Beach and in Berrien Co., at Stephensville.

Salix amygdaloides Anders., Ofv. Handl. Vet. Akad. p. 114, (1858).

Clarke, Ind. [Lake Co.] (Umbach); [Lake Co.] (Deam); Lake Maxinkuckee (H. W. Clarke).

Salix glaucophylla Bebb. in A. Gray, Man. Ed. 6, p. 483, (1889).

[Lake Co.] (Hill); [Porter Co.] (Cowles); Millers, Ind. (Umbach); St. Joseph, Mich., (Tidestrom); Nos. 484, 11082, St. Joseph, Mich. I found it at Webster's Crossing, North of Notre Dame.

Salix viminea Pliny, l. c.

SALIX VIMINALIS, Linn., Sp. Pl., p. 1021, (1753) South Haven, Mich., (Bailey); Escaped from Notre Dame from a plot where it is cultivated for wickerware.

Salix purpurea Linn., Sp. Pl. p. 1017, (1753). St. Joseph, St. Joseph, Mich. (Tidestrom).

Salix humilis Marsh, Marsh. Arb. Am. p. 140, (1785).

[Laporte Co.] (Barnes); [Lake Co.] (Hill); Mineral Springs, (Deam); Nos. 11133, 446y, Notre Dame.

Salix tristis Ait. Hort. Kew. 3, p. 393, (1789).

Salix humilis var. *tristis* Griggs. Proc. Ohio. Acad. 4 p. 301, (1905).

Pine [Lake Co.] (Higdon and Raddin); [Lake Co.] (Hill); Clarke, Ind., (Umbach) Lake Maxinkuckee (H. W. Clarke).

Salix discolor Muhl., l. c. p. 234 pl. 6, f. 1.

Salix eriocephala Michx., Fl. Bor. Am. 2, p. 225, (1803).

Salix prinoides Pursh, Fl. Am. Sept. p. 613, (1814).

Lake Maxinkuckee (H. W. Clarke).

Salix sericea Marsh, l. c. p. 140.

Lake Maxinkuckee (H. W. Clarke); South Haven, Mich., (Bailey).

Salix petiolaris J. E. Smith, Trans. Linn. Soc. 6, p. 122, (1802).

Salix gracilis Anders., Proc. Am. Acad., 4, p. 67, (1858).

Colehour [Lake Co.] (Higdon and Raddin).

Salix bebbiana Sarg., Gard. and Forest. 8, p. 463, (1895).

Salix rostrata Richards. Frank. Jr. App. p. 753, (1823), not Thuill., (1799).

Lake Maxinkuckee (H. W. Clarke); Clarke, Ind., [Lake Co,] (Umbach); St. Joseph and Benton Harbor, Mich. (Tidestrom); No. 541 Chain Lakes.

Salix candidula Nom. Nov.

Salix candida Fluegge, Willd., Sp. Pl. 4, p. 708, (1806), not *Salix candida* Pliny or Ruellius above = *Salix vitellina*.

[Lake Co.] (Hill); Millers, Ind., (Higdon and Raddin); Clarke, Ind. (Umbach); Nos. K8 Hudson Lake, Sagunay [Laporte Co.]: 9738 Dune Park, 2335 Bankson Lake [Van Buren Co.]. I have found it in all the tamarack swamps in the range, Mineral Springs, Chain Lakes, Stephensville, Mich., Tamarack, [Laporte Co.] St. Joseph Co. 8 miles South westof South Bend on the Turkey Creek Road. Lakeville and North Liberty.

Salix pedicellaris Pursh, Fl. Am. Sept. p. 611, (1814).

Salix myrtilloides var. *pedicellaris* Anders. Vet. Acad. Handl., 6 :1, p. 96, (1867).

Pine, Ind. [Lake Co.] and Casella, Ind (Higdon and Raddin); Millers, Ind. (Hill); [Lake Co.] (Umbach); Lake Maxinkuckee (H. W. Clarke).

Order 19. AMENTACEAE.

(Ray, Boerhaave) Gmelin, Fl. Sibir 1, p. 150, (1747). also Linn., Phil. Bot. p. 28, (1751), Jussieu. Gen. p. 407, (1789). Bartling, Ord. Nat. Pl. p. 96, (1830). *Juliferae* Haller. Fl. Helvet, II., p. 292, (1768), *Juliflorae* Endl., Gen. p. 270, (1837), *Cupuliferae* Bentham, in Benth. and Hooker, Gen. III., p. 402, (1830), *Fagales* Engler, l. c. p. 31, (1886), also Engler and Prantl Pflanzenf. Nachtr. p. 345, (1897) *Venosae* Riechenbach, Fl. Ger. Clav. XIV. (1830).

Family 41. **CORYLACEAE** Mirbell ex S. F. Gray,

Nat. Arr. Br. Pl. II. p. 244, (1821) in part, *Corylideae* . F. Gray, and *Cupulaceae* Rich. ex. S. F. Gray, l. c.

CARPINUS Pliny XVI : 15.

Carpinus Dodonaeus. Pempt., 6 : 4 : 19, Caesalpinus, De Plantis. p. 38, (1583).

Lobelius. Obs. p. 607, Adv. p. 440, (1576), Ruellius Nat. Stirp. p. 137, (1543) : Tour Els. p. 453, (1694), I R. H. p. 582, (1700) Linn., Gen. p. 292, (1737), CARPINUS Linn., Gen. p. 432 (1754); *Ostrya* Linn., Syst. (1735) in part.

Carpinus caroliniana Walter, Fl. Car. p. 236, (1788).

Millers, Ind. (Higdon and Raddin); Lake Maxinkuckee (H. W. Clarke); Mineral Springs, (Deam); No. 10299 Rum Village, South of South Bend, Ind. [St. Joseph Co.] I have found it in all the counties.

OSTRYA Pliny, XIII : 21.

Ostrya Thalius, Sylva Herc. p. 83, (1588) also Gesner; Caesalpinus De Plantis p. 39, (1583); *Ostrys* Theophrastus, III : 10; *Ostrya* Linn., Syst., (1735) in par. *Carpinus* Linn., Gen., p. 292, (1737), o. 432, (1754). Hort. Cliff. p. 447, (1737). *Ostrya* Micheli. Gen. p. 223, (1729); C. Bauhin, Pinax p. 427, (1623).

Ostrya virginiana (Miller) Willd., Sp. Pl. 4, o. 469, (1768)

Carpinus virginiana P. Miller, Gard. Dict. 8 ed. (1769).

Lake Maxinkuckee (H. W. Clarke); [Porter Co.] (Deam); [Laporte Co.] (Deam); St. Joseph, Mich. (Tidestrom); Nos. 4, 804, Notre Dame, 814 Lydick, Ind. [St. Joseph Co.], 7748 St. Joseph, Mich. Found in the other countries by me also.

CORYLUS Vergil, Ecl. I : 14, II : 3; Georg., II., II : 65, 299, also Pliny, XVI : 18. Caesalpinus, De Plantis, p. 38, (1588), also Dodonaeus, Lonicer, Castor Durante, Turner, Lobelius, V. Cordus, Gesner, Tragus, Mathtioli, etc., etc. *Avellana* or *Nux*

Avellana Brunfels, Fuchs, Camerarius, etc. *Corylus* Tour. Els. p. 453, (1694), I. R. H., p. 581, (1700), Linn., Syst., (1735), Gen. p. 293, (1737). CORYLUS Gen. p. 433, (1754).

Corylus americana Walter, Fl. Car. p. 236, (1788).

Lake Maxinkuckee (H. W. Clarke). I have found it abundant throughout the range but not fruiting in woods.

Family 42. **BETULACEAE** C. A. Agardh. Aphor. p. 208, (1825) also Bartling, l. c. p. 99.

BETULLA Pliny XVI: 30.

Betula Tragus, Matthioli, Dodonaeus, Anguillara, Bellonius, Lonicer, Lobelius, Castor Durante, Gesner, Thalius, etc., *Betula* Tour., Els. p. 460, (1694), I. R. H. p. 588, (1700) : Linn. Syst. (1735) *stricto sensu*, Gen. p. 285, (1737), *stricto sensu*, *Betula*, Gen. p. 422, (1754) in part.

Betulla populifolia Marsh, Arb. Am. p. 19, (1785), (cor.)

Betula alba var. *populifolia* Spach. Am. Sci. Nat. II., 15 p. 187, (1841).

Pine [Lake Co.] (Higdon and Raddin); [Laporte Co.] (Deam): 820 Notre Dame.

Betulla papyrifera Marsh. l. c. (cor).

Betula papyracea Ait. Hort. Kew. 3, p. 337, (1789).

[Lake Co.] (Deam); Lake Maxinkuckee (H. W. Clarke); Mineral Springs (Deam); Pine [Lake Co.] (Umbach). Found also in St. Joseph, Laporte, and Berrien Co.

Betulla nigra Linn., Sp. Pl. p. 982, (1752).

[Starke Co.] (Deam); Lake Maxinkuckee (H. W. Clarke); No. 806 Notre Dame.

Betulla lenta Linn., Spl Pl. p. 983, (1753).

South Haven, Mich. (L. H. Bailey). Found also by Dr. Greene and myself three miles south of Lakeville, Ind

Betulla lutea Michx. f., Arb. Am. 2, p. 152, pl. 5, (1802), (cor.)

Lake Maxinkuckee (H. W. Clarke); [Laporte Co.] (Deam); Mineral Springs (Deam): Nos. 9157 Sagunay [Laporte Co.] 9097 Chain Lakes [St. Joseph Co.]. The tree has been found by me in Berrien, Van Buren, Porter, Laporte, Lake, Cos. It is often found in Tamarack swamps or on their borders, and not infrequently supercedes the larches as they disappear by drainage.

Betulla pumila Linn., Mant., p. 124, (1767).

[Lake Co.] (S. Coulter); Millers, Ind. (Babcock), (Umbach);

Lake Maxinkuckee (H. W. Clarke); Mineral Springs (Deam); Nos. k17, 880, 60, 9432 Chain Lakes, 38 N. of Notre Dame. Found also in Van Buren, Berrien, Laporte, Porter, and Lake Cos.

ALNUS Pliny XVI : 24.

Alnus Brunfels, Tragus, Matthioli, Anguillara, Dodonaeus, Turner, Lonicer, Lobellus, Caesalpinus, Castor Durante, Thalius, Tabernaemontanus, etc., etc. *Alnus* Tour., Els. p. 459, (1694), I. R. H p. 587, (1700). Linn. Syst. (1735), Gen., p. 285 (1737), Hort. Cliff. p. 441 (1737) *Betula* Gen. p. 442 (1754) in part. *Alnus* P. Miller, Abr. Gard. Dict. (1763), Hill, Br. Herball, p. 510 (1756).

ALNUS Duhamel, Arb. et Arbustes, p. 41 et seq. (1755). *Clethra* Homer, Odys. E., 64 and the Greeks *Clethros* Theophrastus III: 114.

Alnus incana C. Bauhin ex J. Bauhin Hist. 1. c.

Alnus hirsuta C. Bauhin ex J. Bauhin, Hist. 1. c.

Alnus incana (Linn.,) Willd., Sp. Pl. 4 : p. 335, (1805).

Betula Alnus var. *incana* Linn., Sp. Pl., ed. 2, p. 1395, (1763).

[Lake and Porter Cos.] (S. Coulter) [Laporte Co.] (Deam); Clarke, Ind. (Umbach); Mineral Springs (Deam); [Lake Co.] (Deam).

Alnus rugosa (Duroi) Spreng. Syst. 3, p. 848, (1826).

Alnus serrulata Willd., Sp. Pl. 4, p. 336, (1805). *Betula Alnus rugosa* DuRoi, Hanbk. 1, p. 112, (1771).

Edgemoor, Ind. [Lake Co.] (Baltwood); [Starke Co.] (Deam); Nos. 11648, 11649 Mineral Springs. Found also in Berrien, St. Joseph, Laporte and Lake Cos.

Alnus vulgaris (Clusius) ex C. Bauhin Pinax p. 428, (1623); also J. Bauhin Hist. 6, p. 157, (1650).

ALNUS VULGARIS Hill, Br. Herb. p. 510, (1756), *Alnus glutinosa* Gaertn. Fr. and Sem. 2, p. 54, (1791); *Betula Alnus* Linn., Sp. Pl. p. 983, (1753), *Alnus glutinosa* Linn. and Hesselgren, Pan Suecus, (Am. Acad. 2, p. 259, (1751).

(No. 10389, Notre Dame, Ind. Cult.?)

Family 43. **GLANDIFERAE** Theodore Gaza, de Hist. and Causis. Plantar (1529) (1483?) also Caesalpinus De Plantis p. 31, (1583). *Glandiferi* Pliny, XVI : 3 and 4 (!) *Cupuliferae* L. C. Rich. Anal. Fruit, p. 32 and 92, (1808). Lindley, Syst. ed. 2, p. 170, (1836); *Fagineae* Consp. p. 83, (1828). Enum. XVII., (1833). *Cupuliferae* Bartl. Ord. Nat. p. 99, (1830) in part. also

Dumortier Com. Bot. p. 53 (1823). *Fagaceae* Drude Phan. p. 409, (1879). A. Br. Ascherson, Fl. Pv. Brand. 1, p. 62, 615 (1864). *Quercineae* Dumortier as a tribe.

FAGUS Vergil. Ecl., I. : 1, II : 3, III : 12, Geoŕg., I : 177, II : 71. Pliny XVI : 10, Pall. Novemb. 15.
Fagus Brunfels, Tragus, Matthioli, Anguillara, Dodonaeus, Gesner, *Pfegus* Dioscorides I : 144, *Oxya* Theophrastus, III : 10. *Fagus* Brunfels, Tragus, Matthioli, Anguillara, Dodonaeus, Gesner, Lonicer, Lobelius Caesalpinus, Castor Durante, Tabernaemontanus, etc., Tour., Els., p. 455, (1694), I. R. H. p. 584, (1700), Linn., Syst. (1735), Gen., p. 292, (1737) in part.

FAGUS Gen. p. 432, (1754).

Fagus grandifolia Ehrh., Beytr. Naturk. 3, p. 22, (1788).

Fagus americana Sweet Hort. Brit. p. 370, (1826). *Fagus ferruginea* Ait., Hort. Kew., 3, p. 362, (1789).

[Laporte Co.] (Deam); Lake Maxinkuckee (H. W. Clarke), Mineral Springs (Deam); No. 2738 Pine Station on the Wabash R. R. [St. Joseph Co.]; found in every county.

QUERCUS (Lucretius) Vergil, Ecl., I : 17, IV : 30, VI : 13; Georg. I : 349, II : 16, III : 332; Culex, 132. Cat. XI : 17; Pliny XVI: 1 etc. *Drys* Homer — : 12, also Hesiod, Aristophanes. Theocritus, Eid. I : 23, V : 45, VIII : 79 etc. *Quercus* Lobelius, Gesner, Valerius Cordus, Acosta, Anguillara, Bellonius, Caesalpinus, etc., etc.

[*Aesculus* Pliny XVI. 6 (=*Q. Aesculus*): *Ilex* Vergil, Columella, (=*Q. Ilex*). This is the *Prinus* of Hesiod Theophrastus, Dioscorides, and the Greeks. *Suber* Pliny=*Phellos* Theophrastus (=*Q. Suber*) *Aigilops* Theophrastus (=*Q. Aigilops*) *Robur* of the latins (=*Q. Robur*).] *Cerris* Pliny (=*Quercus Cerris*) *Quercus* Tour., El.s p. 454, (1694), I. R. H. p. 582, (1700) exclusive of *Ilex* and *Suber* Tour. which are separate genera with this author *Quercus* Linnaeus, Syst. (1735), Gen. p. 291, (1737), QUERCUS Linn., Gen., p. 431, (1754).

Quercus alba Banister in Ray's Hist. Pl. p. 1928 et seq. (1688). *Quercus alba* Linn., (1688) Sp. Pl., p. 996, (1753).

[Laporte Co.] (Deam); Lake Maxinkuckee (H. W. Clarke). I have found it in all the counties as one of the commonest species.

Quercus minor (Marsh.) Sargent Gard. For. 2 p. 471, (1989). *Quercus alba minor* Marsh., Arb. Am. p. 120, (1789).

Quercus stellata Wang. Amer. p. 78 pl. 5 f. 15, (1787), *Quercus obtusiloba* Michx., Hist. Chen. Am. I., p. I., (1801).

Whiting, Ind. (Higdon and Raddin), No. 10207 Mineral Spring.

Quercus bicolor Willd. Neue Schrift. Ges. Nat. Fr. Berlin, 3, p. 396, (1801).

Mineral Springs (Deam); [Starke Co.] (Deam) Nos. 475¾ St. Joseph, Mich., 1917, 583 Notre Dame along the St. Joseph River.

Quercus lyrata Walt., Fl. Car. p. 235, (1788).

Lake Maxinkuckee (H. W. Clarke).

Quercus macrocarpa Micx., Hist. Chen. Am., 2, p. 23, (1801). *Quercus olivaeformis* Michx. f. Hist. Arb. Am. 2, pl. 2, (1812).

Lake Maxinkuckee (H. W. Clarke); [Starke Co.] (Deame); [Laporte Co.] (Deam); St. Joseph, Mich. (Tidestrom). I have found it South of South Bend, Ind., St. Joseph Co. Not as common as formerly.

Quercus Michauxii Nuttall, Gen., 2, p. 215, (1818)

[Van Buren Co.] (H. S. Pepoon).

Quercus prinoides Willd., l. c. p. 397, (1901).

Lake Maxinkuckee (H. W. Clarke).

Quercus imbricaria Michx., Hist. Chen. Am. p. 9, pl. 15, 16, (1801).

Nos. 2142 Sumption Prairie Road S. of South Bend, Ind.; 9522, 10442 Notre Dame; 584 near marsh on I. I. I. R. R. Notre Dame. Found also in Porter and Laporte Cos.

Quercus ellipsoidalis E. J. Hill, Bot. Gaz. 27, p. 204, (1899).

St. Joseph, Mich. (Tidestrom).

Quercus velutina Lam., Encycl. 1, 721, (1783).

Quercus tinctoria Bartram, Travils p. 37, (1791); *Quercus coccinea* var. *tinctoria* A. Gray, Man. Ed. 5, p. 454, (1867).

Lake Maxinkuckee (H. W. Clarke); [Laporte Co.] (Deam).

Quercus coccinea Wang. Amer. p. 44, pl. 4, f. 9, (1787).

No. 9348 Notre Dame, Ind.

Quercus palustris Du Roi, Hanbk., 2, p. 268, pl. 5, f. 4, (1772).

[Lake Co.] (Hill); Lake Maxinkuckee (H. W. Clarke).

Quercus rubra J. Banister, Cat. in J. Ray. Hist. l. c. (1680). *Quercus rubra* Linn., Sp. Pl. p. 996, (1753).

Lake Maxinkuckee (H. W. Clarke); [Laporte Co.] (Deam). No. 2669 Sagunay [Laporte Co.]; seen also in Elkhart, St. Joseph, Van Buren, Porter and Berrien Cos.

Order 20. URTICALES.

Engl. Syllab. ed. 1, p. 95, (1892).

Family 44. **ULMACEAE** Mirbel, El., II., p. 905, (1815). also Lindley Nat. Syst., Ed. 2, p. 178, (1836); Planch in DC. Prodr. XVII., p. 151, (1873).

ULMUS Vergil, Ecl. II : 70, V : 3, Georg. I : 170, II : 18, 72, 222, IV : 144, also Catullus, Columella, V : 6, Pliny XVI : 17, Claudian. *Ptelea* Homer. Il., Φ, 350, Hesiod, Theophrastus III : 14 Dioscorides, I : 111, Theocritus, Eid. I : 21, VII : 8. Claudius, etc., *Ulmus* Tragus, Matthioli, Dodonaeus, Bellonius, Turner, Cordus, Gesner, Lonicer, Lobellius, Caesalpinus, Camerarius, Clusius, Anguillara, Castor Durante, Tabernaemontanus, etc., etc. *Ulmus* Tour., Els., p. 473, (1694), I. R. H., p. 601 (1700), Linnaeus, Syst., (1735), Gen. p. 68, (1737). ULMUS Sen., p. 106, (1754).

Ulmus americana Linn., Sp. Pl., p. 226, (1753).

Lake Maxinkuckee (H. W. Clarke); No. 7721 St. Joseph, Mich. Found in all the counties. It seems to be the healthiest of our tees under the rapidly changing conditions due to deforestation in our area.

Ulmus Thomae Sarg., Silva 14, p. 102, (1902). em.

Ulmus racemosa Thomas, Am. Jr. Sci. 19, p. 170, (1831). not *Ulmus racemosa* Borck.

Nos. 11475, 11688, Studebaker's Woods, South of South Bend, Ind.; [7380 Kalamazoo, Mich. [Kalamazoo Co.] (Tuthill.)]. I have found this plant only in the above mentioned place where it is quite abundant growing with *U. americana* and *U. fulva*. Doubtless it will be found in other large woods.

Ulmus fulva Michx., Fl. Bor. Am., 1, p. 172, (1803).

Lake Maxinkuckee (H. W. Clarke); No. 9369 Notre Dame, Ind. Rather abundant in Studebaker's Woods South Bend, Ind. Many of the younger trees are annually injured by the removal of large strips of bark for medicinal purposes. Found also in Elkhart, Laporte, Porter, Berrien and Van Buren Cos.

CELTIS Pliny XIII : 17, also *Celtis* Gaza, Turner, *Lotos* Dioscordes I : 134, alo Pliny l. c. *Celtis* Tour., p 485, (1694). I. R. H. p. 612, (1700): Linn., Gen.. p. 337, (1737), CELTIS Linn., Gen. p. 467, (1754).

Celtis occidentalis Linn., Sp. Il. p. 1044, (1753).

[Starke Co.] (Deam); Millers, Ind. (Higdon and Raddin); Found in Laporte and St. Joseph Co. also.

Celtis occidentalis var. **pumila.**

Celtis pumila Pursh. Fl. Am. Sept., p. 200, (1816).

Lake Maxinkuckee (H. W. Clarke); [Lake Co.] (Deam, Hill).

Celtis crassifolia Lam. Encyl. 4, o. 138, (1797).

No. 10388 Notre Dame, Ind.

Family 45. **MORACEAE** Lindl., Veg. Kingd. p. 266, (1847) ex Engler and Prantl. Pflanzenf. III., 1, p. 66, (1888).

MORUS Columella, V : 10, X : 402, Palladius, Ins. 127. *Morea* and *Sykaminea* Dioscorides, I : 180. *Morum* Vergil. *Morus* Brunfels, Tragus, Matthioli. Fuchs, Dodonaeus, Turner, Lonicer, Rauwolf, Caesalpinus, Tabernaemontanus, Gesner, Camerarius. Cordus Lobelius, etc. *Morus* Tour., Els., p. 462, (1694), I. R. H. p. 589, (1700); Linn., Syst. (1735), Gen. p. 283, (1737). MORUS Linn., Gen. p. 424, (1754).

Morus rubra Linn., Sp. Pl. p. 986, (1753).

Lake Maxinkuckee (H. W. Clarke) (Deam). Scarce. One large tree on Notre Dame grounds.

Morus alba Matthioli Com. in Diosc. p. 149, (1554), Anguillara, Camerarius Tabernaemontanus, Gesner, Rauwolf, etc.

Morus candida Dodonaeus, Pempt., 6 : 3 : 18. (1583) also Valerius Cordus, Lobelius Obs. p. 610, (1576).

Morus alba Linn., Sp. Pl., p. 986, (1753).

No. 689 Studebaker's Woods. Escaped and spreading from plants introduced at Notre Dame.

TOXYLON Raf., Am. Monthly Maf. 2, p. 118, (1817).

Maclura Nuttall, Gen. 2, p. 333, (1818).

Toxylon pomiferum Raf. l. c.

Maclura aurantiaca Nuttall, l. c. p. 234.

Maclura pomifera Schneider. Handl. Laubh. 1, p. 806, (1906).

No. 9562, Notre Dame, Indiana. Escaped from plants introduced for hedges.

Family 47. **CANABINACEAE** Lindley. Veg. Kigd. p. 265, (1846).

Lupulus J. de Manliis ex Brunfels Herb. Viv. Ic., 2, p. 169, (App.) (1531) also Matthioli, Turner, Dodo-

naeus, Clusius, Talemaemontanus, Tragus, Lonicer, Castor Durante, Lobelius, Camerarius, Ruellius, etc.

Lupulus Tour. Els. p. 427, (1694), I. R. H. p. 535, (1700). *Humulus* Linn. Ssyt., (1735), Gen. p. 304, (1737). HUMULUS Gen., p. 453, (1753). *Lupulus* Gaertner, Fruct. I, p. 358, (1788).

Lupulus salictarius Dodonaeus. Trium Prior.

Stirp. Hist. p. 386, (1553), *Lupulus salictarius* Tragus Lonicer, Castor Durante. *Lupulus communis* Gaertner, l. c. p. 75. HUMULUS LUPULUS Linn., Sp. Pl. p. 1028, (1753), *Humulus americanus* Nuttall, Jour Acad. Phil. VI p. 181, (1840). *Humulus salictarius* Linn. and Hessel gren. Pan Suecus, Am. Adad. 2 p. 260, (1751).

[Lake Co.] (Deam): No. 11676 N. of Notre Dame near Four Mile Bridge. Found also at St. Joseph, Mich., and near Michigan City [Laporte Co.].

CANNABIS Dioscorides III : 157, Pliny XIX : 4, XIX : 9, XXI : 23.

Cannabis Brunfels, Matthioli, Anguillara, Lacuna, Turner, Lonicer, Lobellius, Caesalpinus, Castor Durante, Tabernaemontanu Lonicer, Lobelius, Caesalpinus, Castor Durante, Tabernaemontanus, Gesner, Fuchs, Tragus, Dodonaeus, Marcellus Vergilius, etc., etc. *Cannabis* Tour., Els., p. 427, (1694), I. R. H., p. 531, etc., etc. *Cannabis* Tour., Els., p. 427, (1694), I. R. H., p. 531, (1700), Linn., Syst., (1735), Gen. p. 304, (1737). CANNABIS Linn., p. 453, (1754).

Cannabis sativa (Dioscorides) Marcellus Vergilius, Comment. Diosc. p. 453, (1529) also Conrad Gesner, Hist. Plant. p. 30 b. (1541), Ruellius, Diosc. Mat. Med. p. 298, (1547), also Fuchs, Cordus, Dodonaeus, C. Bauhin Pinax p. 320, (1623) also Tour. Els. and I. R. H. l. c. CANNABIS SATIVA Linn., Sp. Pl. p. 1027, (1753).

[Lake Co.] (Deam); Lake Maxinkuckee (H. W. Clarke): Nos. 11518 Notre Dame near St. Joseph River, 9376 N. of Notre Dame at Webster's Station. Found also at St. Joseph, Mich., along the Pere Mrquette R. R.

Family 48. **URTICEAE** Ventenat. Tabl. Reg. Veg. p. 524, (1794).

Urticaceae Endl., Gen. p. 282, (1837).

URTICA !Pliny XXII: 13.

Acalyphe Dioscorides IV : 94, Theophrastus VIII : 7. *Urtica*

Brunfels, Fuchs, Dodonaeus, Lonicer, Thalius, Tabernaemontanus, Tragus, Matthioli, Cordus, Gesner, Caesalpino, Lobelius, Castor Durante, Clusius, Turner, Camerarius, etc., etc. *Cnida* Hippocrates *Urtica* Tour., Els. p. 426, (1694), I. R. A., p. 534, (1700) Linn., Syst., (1735), Gen. Pl. p. 283, (1737), URTICA Linn., p. 423, (1754).

Urtica major (Brumfels) Fuchs, Stirp. Hist. Jr. 59, (1549) (1542?) Plant, Hirt. p. 40b, (1546). also Dodonaeus, Tabernaemontanus, Thalius, Harc. p. 131, (1588), C. Bauhin, Phytopinax p. 438, (1596), etc.

Urtica rubra Tubernaemontanus, Gesner.

Urtica perennis Linn. and Hessel., Pan Suecus., Am. Acad. 2,p. 259, (1751).

URTICA DIOICA Linn., Sp. Rl. p. 984, (1753).

No. 11443 Notre Dame, Ind.

Urtica gracilis Ait., Hort. Kew. 3 p. 34,1 (1789).

Lake Maxinkuckee (H. W. Clarke); Millers (Umbach); No. 11684 Studebaker's Woods, South Bend, Common also in Laporte, Lake, Elkhart, Berrien, Van Buren and Porter Cos.

URTICASTRUM Moehring, Hort. Prov. (1736) also Fabricius, Enum. p. 204, (1759).

Laportea Gaudich., Freye. Voy. Bot. j. 498, (1826).

Urticastrum divaricatum (Linn.) Kuntze, Rev. Gen. Pl. p. 635, (1891).

Urtica divaricata Linn., Sp. Pl. p. 985, (1753), *Urtica canadensis* Linn. l. c. *Laportea canadensis* (Linn.) Gaudich. l. c.

Lake Maxinkuckee (H. W. Clarke); Nos. 1801, 11477, Studebakers Woods, South Bend, also Hudson Lake, Laporte Co., St. Joseph, Mich., Van Buren Co., Porter Co., Elkhart Co.

ADICEA Raf. An. Nat. p. 129, (1815).

Adike Raf. N. Fl. p. 63, (1836).

Adicea Nieuwlandii Lunell, Am. Mid. Nat. p. 10, (1913).

Nos. 10236, 11739, Mineral Springs; 1802, 11719, 11592, 11610, 15007A, 15006A, 15005A, 15003A, 15004A, Studebaker's Woods, South Bend; 15002A, 15009A, 15010A, 11726, Notre Dame, Ind.

RAMIUM Rumphius, Herb. Amb. V. p. 214, (1747).

Boehmeria Jacq., Stirp. Am., p. 247, p. 157, (1763), *Duretia* Gaudich., Freyc. Voy. Bot. p. 500, adn (1826).

Ramium cylindricum (Linn.) Kuntze, Rev. Gen. II., p. 632, (1891).

Urtica cylindrica Linn., Sp. Pl. p. 984, (1753), *Boehmeria cylindrica* Sw., Prod. p. 34, (1788), *Urtica capitata* Linn., Spl Pl. p. 985, (1753).

HELXINE Dioscorides IV : 86, also Oribas., Matthioli, Lonicer, Lobelius, Caesalpinus, Brunfels, Cordus *Perdicium* Theophrastus (?) also Galen, 6 simpl. *Parietaria* Brunfels, 2, (1531) Turner, Cordus, Dodonaeus, Tabernaemontanus, Gesner, Tragus, C. Bauhin, *Muralis herba* Pliny and Celsus.

Parietaria Tour., Els. p. 409, (1694), I. R. H., p. 509, (1700) Linn. Syst. (1735), Gen. p. 317, (1737).

Parietaria Gen., p. 471, (1754).

Helxine pennsylvanica (Muhl.)

Parietaria pennsylvanica Muhlenberg, Willd. Sp. Pl. 4, p 155, (1806).

No. 15001a Notre Dame, Ind. Found in all the counties.

Order 21. SANTALALES.

Engler. Syllab. ed. I., p. 98, (1892).

Family 49. **SANTALACEAE** R. Br. Prodr. p. 350, (1870).

COMANDRA Nuttall, Gen. 1, p. 157, (1818).

Comandra umbellata (Linn.) Nutt., l. h.

Thesium umbellatum Linn., Sp. Pl. p. 208, (1753).

Nos. 2034, 3309 Notre Dame, (Dr. F. Powers). Lake Maxinkuckee (H. W. Clarke); Millers (A. Chase) [St. Joseph Co.] (Rothert); [Lake Co.] (Deam); [Laporte Co.] (Deam); Nos. 404, 9295 Notre Dame, Ind. No. 404 North of Notre Dame at Websters. Found in every county.

Order 22. ARISTOLOCHIEAE.

Bartling, Ord. Nat. Pl. p. 79, (1830).

Aristolochiales Engler, Syllab. 1, p. 100, (1892).

Family 50. **ASARINEAE** Dumortier An. Pl., p. 14, (1829). also Daubeny. Lect. Rom. Husb. p. 315, (1857), *Asaraceae.*

ASARUM Dioscorides I : 9. Pliny XXI : 6.

Asarum Brunfels, Tragus, Matthioli, Fuchs, Dodonaeus, Dalechamps, Lacuna, Cordus, Turner, Gesner, Lonicer, Castor Durante, Morrison, Thalius, Tabernaemontanus, Lobelius, Camerarius, Cuba, Hort. Sanit. (1491) also Marcellus Vergilius, Disc.

Com. p. 21, (1529) etc., etc., *Asarum* Tour., Els. p. 402, (1694), J. R. H., p. 501, (1700), Linn. Syst., (1735), Gen. p. 137, (1737). ASARUM Linn., Gen. p. 201, (1754).

Asarum canadense Cornuti., Pl. Canad., p. 24, (1635), also Linn., Sp. Pl. p. 442, (1753).

Nos. 432, 9364, 11174 Rum Village, S. of South Bend. 7789 Notre Dame (Tidestrom). Found by me also in Laporte, Berrien, Porter and Marshall Cos.

Family 51. **ARISTOLOCHIACEAE** Blume, Enum., Pl., Javan., 1, p. 81, (1850).

ARISTOLOCHIA Dioscorides, III : 4, Pliny XXV : 8.

Aristolochia Tragus, Lonicer, Camerarius, Matthioli, Dodonaeus, Anguillara, Cordus, Gesner, Turner, Lacuna, Lobellius, Castor Durante, Clusius, Caesalpinus, Fuchs, Rauwolf, Marcellus Vergilius, Cuba, Hort. Sanit. (1491) Ruellius, etc., etc. *Aristolochia* Tour., Els. p. 132, (1694). I. R. H., .. 162, (1700) Linn., Syst., (1735), Gen. Pl. p. 275, (1737). ARISTOLOCHIA Linn., Gen., p. 410, (1754). All the above incl. of *Pistolochia* Clusius, Dodonaeus, Gesner, Camerarius, Castor Durante, etc.

Aristolochia Serpentaria Linn., Sp. Pl., p. 96, (1753).

Nos. 11807a, 63, S. E. of Notre Dame, Ind., 2994, 2798, Notre Dame University grounds. Quite abundant.

Order 23. FAGOPYRINAE.

Bartling, Ord. Nat., p. 106, (1830).

Polygonales Engler, in Eng. and Prantl, Pflanzenf Nachtr., p. 346, (1897).

Family 52. **POLYGONEAE** Jussieu. Gen. p. 22, (1787).

Polygonaceae Lindley, Nat. Syst. Ed. 2, p. 211, (1836).

Persicariaceae, Post and Kuntze, Lexicon p. 309, (1904).

RUMEX Vergil, Mov. 72. Pliny XIX : 12, 60.

Oxylapathum Dioscorides. *Acetosa* Cuba, Hortus Sanitatis, (1491). also Nevenara, ex : Brunfels Herb. Viv. Ic. II. p. 68, 117, also J. de Manliis, l. c. p. 168, (1531), *Acetosa* P. Miller, Abr. Gard. Dict. (1763), also Parkinson, Moench, Lonicer, Castor Durante, Columna, Carmerarius, C. Bauhin. Prod., *Acetosa* Tour. Els. p. 403, (1694), I. R. H. p. 502, (1700);

Rumex Acetosella Linn., Sp. Pl., p. 338, (1753).

Acetosa minor Castor Durante.

Acetosa repens St. Gray, Nat. Arr. 2, p. 276, (1821).

Acetosa tennifolia Moench, Meth. p. 357, (1794).

Acetosa Acetosella Miller. Gard. Diet., 8, Ev. (1768).

Lake Maxinkuckee (H. W. Clarke); [Lake Co.] (Hill); Millers, Ind. (Umbach); No. 2497 Notre Dame. Dr. F. Powers. Found in all the counties. Abundant.

LAPATHUM Theophrastus, I : 9, 7 : 2 Dioscorides II : 140. *Lapathos* Columella X : 373.

Lapathum Gesner, Anguillara, Dodonaeus, Tragus, Ray, Lobelius, Camerarius, Lonicer, Castor Durante, Caesalpinus, Tabernaemontanus, Dalechamps, Clusius, etc., etc. *Lapathum* Tour., Els. p. 404, (1694), I. R. H. p. 504, (1700). *Rumex* Linn. Syst. (1735), Gen. p. 105, (1737). RUMEX Gen. p. 156, (1754). *Lapathum* Haller, Adanson, Scopoli, Lamarck, etc.

Lapathum verticillatum (Linn.).

Rumex verticillatus Linn., Sp. Pl., p. 334, (1753).

Nos. 2303, 2699, 11332, Notre Dame, Ind., 2742, Pine [St. Joseph Co.], Ind. Found in all the other countries.

Lapathum altissimum (Wood).

Rumex altissimus Wood, Classbook, p. 477, (1853).

Millers, Ind. (Umbach); Nos. 11290 Crumstown [St. Joseph Co.]; 9086 Notre Dame, Ind.

Lapathum brittanicum (Linn.).

Rumex brittanicus, Linn., Sp. Pl. p. 354, (1753), *Rumex Hydrolapathum* var. *americana* A. Gray, Man. ed. 2 p. 377, (1856); *Rumex orbiculatus* A. Gray, Man. ed. 5 p. 420, (1867).

Clarke, Ind. [Lake Co.] Umbach.

Lapathum crispum (Linn.) Scopoli, Fl. Car. ed. 2, p. 261, (1772)

Rumex crispus Linn., Sp. Pl., p. 335, (1753).

Found in Berrien, St. Joseph, Laporte, Marshall, Porter, Van Buren Co.

Lapathum mexicanum (Meisn.).

Rumex mexicanus Meisner, DC., Prod. 14, p. 45, (1856).

Rumex salicifolius Hooker, Fl. Bor. Am. 2, p. 129, (1840). not Weinm. (1821).

No. 9556 South Bend, Olivers.

FAGOPYRUM Lobelius, Obs. p. 513, (1576). Dodonaeus Pempt. 4 : 1 : 32, (1583), Stapelius, Theoph. Int. p. 929, (1644).

Tragopyrum Gerard. *Fagopyrum* Tour., Els., p. 411, (1694), I. R. H., p. 4511, (1700), *Helxine* Linn., Syst. (1735), Gen. p. 116, (1737), *Polygonum* Linn., Gen., p. 170, (1754). *FAGOPYRUM*

Hill. Br. Herb. p. 486, (1756) also Morandi (1761), Gaertner, (1791)

Fagopyrum vulgare Hill, l. c. (1756).

Fagopyrum esculentum Moench, Meth. p. 290, (1794).

Polygonum Fzgopyrum Linn., Sp. Pl., p. 364, (1753).

Nos. 10335, 2521, Notre Dame, Ind.

PERSICARIA J. de Manliis ex Brunfels, Herb. Viv. Id. II., p. 173, (1531), Tragus, l. c. p. 161. Ruellius Nat. Stirp. p. 410, (1543). *Pulciaria* Brunfels l. c. p. 14, 15, 16, (1531). *Persicaria* Fuchs, Dodonaeus, Anguillara, Castor Durante, Matthioli, Tabernaemontanus, Ericius Cordus, Gesner, Lobelius, Caesalpinus, Lonicer, etc., etc. *Persicaria* Tour., Els. Bot. p. 410, (1694), I. R. H. p. 509, (1700); Linnaeus, Syst., (1735), Gen. Pl. p. 35, (1737).

PERSICARIA Trew. Herb. Blackw. t. 118, 119, (1754), Hill. Br. Herb. p. 486, (1756), Shaw. Trav. Obs. Lev. Collect. p. 466, (1757). Morandi, Hist. Pl. p. 118, (1761), Adanson, Fam. des Pl. II., p. 276, (1763). *Hydropiper* Fuchs, Anguillara, Dodonaeus, Matthiole, V. Cordus, Gesner, Caesalpinus.

Section POTAMOCALLIS Nwd., Am. Mid. Nat. II., p. 216, (1912).

Persicaria emersa (Michx.) Small., Fl. S. E. U. S. p. 376, (1903)

Persicaria coccinea (Muhl.) Greene, Leaflets I. p. 24, 36, (1904).

Polygonum amphibium var. *emersum* C. Rich in Michx. Flor. Bor. Am. I. p. 240, (1803).

For other synonyms as also for occurrences in our region of this and the following amphibious smartweeds see Am. Mid. Nat. II., p. 219, et. seg. (1912), p. 20, (1911).

Also Lake Maxinkuckee (H. W. Clarke).

Persicaria emersa var. **asprella.**

Persicaria coccinea var. *asprella* Greene. l. c. p. 36, Am. Mid. Nat. II., p. 221, (1912).

Persicaria pratincola Greene. Leaflets l. c. p. 36, Am. Mid. Nat. l. c. p. 223, also Millers, Ind. (Umbach).

Persicaria grandifolia Greene l. c. p. 37, 49, Am. Mid. Nat. l. c. p. 225, (1912), p. 20, (1911).

Persicaria tanaophylla Nwd. Am. Mid. Nat. l. c. p. 226,

Persicaria carictorum Nwd. Zm. Mid. Nat. l. c. p. 230.

The pond from which this type was collected is now being drained for the purpose of forming farm land. The aquatic phase will perhaps be extinct in this place next season. The terrestrial

phase, will, however, persist for a long time as in this form it is a weed hard to eradicate.

Persicaria mesochora Greene. l. c. p. 28. Am. Mid Nat. p. 234 l. c. p. 17, (1911). also Millers, Ind. (Umbach), Dune Park (A. Chase), both [Lake Co.].

Persicaria mesochora var. **arenicola** Nwd. l. c. p. 235.

Persicaria ammophila Greene. l. c. p. 471, Am. Mid. Nat. l. c. p. 236.

Persicaria fluitans (Eaton) Greene. l. c. p. 26, Am. Mid. Nat. l. c. p. 244, (1912), also p. 15, (1911).

Persicaria Hartwrightii (A. Gray) Greene l. c. p. 24, Am Mid. Nat. II., p. 15, (1911).

Section **Eupersicaria.**

Persicaria lapathifolia (Linn.) S. F. Gray, Nat. Au. II., p. 270, (1821).

Polygonum lapathifolium Linn., Sp. Pl. p. 360, (1753).

Polygonum incarnatum Ell., Bot. S. C. and Ga. 1, p. 456, (1817).

[Lake Co.] (Higdon and Raddin); Clarke, Ind. (Umbach); Lake Maxinkuckee (H. W. Clarke), [Lake Co.] (Deam); Nos. 2733A, Notre Dame, 369A, 9094, 9089, Webster's Station N. of Notre Dame. Found also in Van Buren, Berrien, Laporte, Porter, and Marshall Cos.

Persicaria pennsylvanica (Linn.) Small, Fl. S. E. U. S. p. 377, (1903).

Polygonum pennsylvanicum Linn., Sp. Pl. p. 362, (1753).

Lake Maxinkuckee (H. W. Clarke); [Lake Co.] (Deam); Nos. 1841, 10334, 9494, 9485. Notre Dame, Nos. 9419, 9488, Collected at Webster's Station, were affected by some smut-like parasitic fungus which caused the destruction of nearly all the inflorencesces on the plants in the locality.

Persicaria persicarioides (H. B. K.) Small. l. c. p. 378.

Polygonum persicarioides H. B. K., Nov. Gen. 2, p. 179, (1817).

Nos. 1825, 9409, Notre Dame, Ind.

Persicaria maculata Euricius Cordus, Botanologicon, (1551). Also Thalius, Hercyna p. 85, (1588), also S. F. Gray Nat. Air, p. 270, (1821), PERSICARIA MACULOSA Trew, Herb. Blackw, t. 118, (1754), also Gesner, Ray, *Persicaria mitis* J. Bauhin, Lobelius (1576) Linn. Fl. Lapp. No. 71, Morandi, *Persicaria mitis* Linn.,

Am. Acad. II., p. 46, (1751), *Polygonum Persicaria* Linn., Sp. Pl. p. 361, (1753).

Lake Maxinkuckee (H. W. Clarke); Nos. 1825, 9409, Notre Dame, Ind. Found also in Berrien, Laporte, Marshall, Van Buren, Cass, and Porter Co.

Persicaria hydropiperoides (Michx.) Small. l. c. p. 378.

Polygonum hydropiperoides Michx., Fl. Bor. Am. 1, p. 239, (1803).

Polygonum mite Persoon, Syn. I, p. 440, (1805).

Millers (Umbach): Nos. 10258, 10218, 10257 Mineral Springs [Porter Co.], 773 Hudson Lake, 205, 10257A Webster's Station N. of Notre Dame, 2694 Rum Village, S. of South Bend. Found also in Berrien, Van Buren, Marshall, Elkhart and Lake Cos.

Persicaria urens Lobelius. Obs. p. 171, Ind. 16, (1576), also Ray, Meth. p. 68, (1682).

PERSICARIA HYDROPIPER (Linn.) Opiz, Seznam, p. 72, (1852).

Persicaria mordax Thalius Sylva, Hercyna, p. 85, (1588). *Polygonum Hydropiper* Linn., Sp. Pl. p. 361, (1753). *Persicaria urens* Linn. and Hesselgren, Pan Suecus, Am. Acad. II., p. 246 (1851).

Lake Maxinkuckee (H. W. Clarke); Millers (Umbach); Nos. K35 Hudson Lake, 9480 Notre Dame. Found also in Marshall, Porter, Van Buren, Cass, Berrien, Lake Cos.

Persicaria punctata (Ell.) Small, l. c. p. 379.

Polygonum punctatum Ell., Bot. S. C. and Ga. I, p. 435, (1817); *Polygonum acre* H. B. K., Nov. Gen. 2, p. 179, (1817). Not Lam.

Lake Maxinkuckee (H. W. Clarke); Dune Park (A. Chase). [Lake Co.] (Deam).

Persicaria punctata var. **leptostachya** (Meisn.) Small. l. c. p. 379.

Polygonum punctatum var. *leptostachyum* (Meisner) Small, Bull Torr. Bot. Club. 19, p. 356, (1892). *Polygonum acre* var. *leptostachyum* Meisner, DC. Prod. 14, p. 108, (1856).

No. 9408 Notre Dame, 10216 Mineral Springs.

Persicaria tomentosa (Schrank) Bicknell.

Polygonum tomentosum Schrank, Baier, Fl. 1, p. 669, (1789).

No. 2733 S. S. S. R. R. 4 miles from Galien, Mich, in St. Joseph Co., Ind.

Section (Old Genus) HEPTARINIA Raf., Fl. Tell. III., p. 12, 16, 94, 95, (1836); also New Fl. Am. IV., p. 48, (1836),

Persicaria orientalis (Linn.), Spach, Hist. Nat. Veg. 10, p. 535 (1841).

Polygonum orientale Linn., Sp. Pl., p. 362, (1753).

No. 11502 Notre Dame escaped from cultivation.

POLYGONUM Dioscorides, IV : 4, Pliny, XXVII : 12.

Polygonum E. Cordus, Tragus, Lacuna, Anguillara, V. Cordus, Ruellius, M. Vergilius, Hermolaus Barbarus Gesner, Caesalpinus, Thalius, Camerarius, Castor Durante, Lobelius, Lonicer, Tabernaemontanus, Dalechamps, Dodonaeus, C usius, Matthioli, etc., etc. *Polygonum* Tour. Els., p. 411, (1694), I. R. H. p. 511, (1700), *Polygonum* Linn., Syst. (1735) and Gen. p. 116, (1737), in a limited sense. *Polygonum* Linn., p. 170, (1754) in part.

Polygonum vulgare Camerarius, Hort. Med. p. 129, 130, (1588). *Polygonum latifolium* C. Bauhin Pinax p. 281, (1623). POLYGONUM AVICULARE Linn., Sp. Pl. p. 362, (1753). *Polygonum latifolium* Tour., Els. p. 411, (1694), I. R. H. p. 510 (1700). *Polygonum mas* Matthioli, Fuchs, Dodonaeus, Anguillara, Cordus, *Polygonum masculum* Tragus, Lacuna, *Polygonum primum* Turner. *Polygonum majus* Lonicer, Tabernaemontanus. *Polygonum vulgare* Linn., and Hesselgren. l. c. p. 246, (1751)

Lake Maxinkuckee (H. W. Clarke); No. 9187 Granger, Ind. [St. Joseph Co.]; Found also in Elkhart, Berrien, Van Buren, Laporte, Marshall, Porter and State Cos.

Polygonum erectum (Linn.) Sp. Pl. p. 363, (1753).

Lake Maxinkuckee (H. W. Clarke). No. 11483 Studebaker's Woods, South of South Bend. Also Laporte and Berrien Cos.

Polygonum tenue Michx. Fl. Bor. Am. 1 p. 237, (1803).

[Lake Co.] (Hill, Deam); [Porter Co.] (Cowles); Lake Maxinkuckee, (H. W. Clrake); Clarke, Ind. (Umbach).

PLEUROPTERUS Turzc. Bull, Soc. Nat. Moscow, 21, p. 87, (1848).

Pleuropterus Zuccarinii Small, Mem. Dept. Bot. Col. Coll. 1. p. 158, pl. 66, (1895).

Polygonum cuspidatum Sieb. ond Zucc. Fl. Jap. 2, p. 84, (1846) not Willd. (1825).

Nos. 10350, 10350A. Waste ground, Notre Dame. Spreading from specimens once probably cultivated nearby.

TOVARA Adans., Fam. Pl. 2, p. 276, (1763).

Tovara virginiana (Linn.) Raf., Fl. Tell. 3, p. 12, (1836).

Polygonum virginianum Linn., Sp. Pl. p, 360, (1753).

Lake Maxinkuckee (H. W. Clarke); No. 804 South Bend, Ind. Found abundantly in all the countries.

BILDERDYKIA Dumortier. Fl. Belg. Stam. p. 18, (1827): *Tiniaria* Webb. and Moq.; Webb and Berth. Hist. Nat. Canar. 3, p. 221, (1836–40).

Bilderdyckia Convolvulus (Linn.) Dum. l. c. (1827).

Polygonum Convolvulus Linn., Sp. Pl. p. 364, (1753); *Tiniaria Convolvulus* Webb. and Moq. l. c. (1836); *Orobanche Ruellii* Gesner, *Helxine cissampelos* Dodonaeus, *Centunculus Plinii* Anguillara *Volubilis nigra* Tabernaemontanus, Gesner, *Polygonum hederaceum* Columna.

Lake Maxinkuckee (H. W. Clarke); Pine, Ind. [Lake Co.] (Umbach). Found by me in St. Joseph and Berrien Cos.

Bilderdykia dumetorum (Linn.), Dum. l. c. (1829).

Polygonum dumetorum Linn., Sp. Pl. 2nd Ed. p. 522, (1762); *Tiniaria dumetorum* Opiz, Segnam, p. 98, (1852).

Nos. 9431, 2520, 11354, 11444, Notre Dame, Ind.

Bilderdykia cilinodis (Michx.) Greene, Leaflets., p. 23, (1904).

Tiniaria cilinodis (Michx) Small, Fl. S. E. U. S. p. 382, (1903). *Polygonum cilinode* Michx., Fl. Bor. Am. 1 p. 241, (1803).

South Haven [Van Buren Co.] (L. H. Bailey).

TRACAULON Raf., Fl. Tell. 3, p. 13, (1836).

Echinocaulos (Meisn.) Hassk., Fl. XXV., 2, Beibl. p. 20, (1842).

Tracaulon sagittatum (Linn.), Small. l. c. p. 381, (1903).

Polygonum sagittatum Linn., Sp. Pl. p. 363, (1753)

Lake Maxinkuckee (H. W. Clarke); Dune Park (A. Chase); Clarke, Ind. (Umbach); Nos. 9384, 2249, 1824, Notre Dame, Ind. 745 Sagunay [Laporte Co.].

Tracaulon arifolium (Linn.) Raf. l. c.

Polygonum arifolium Linn., Sp. Pl. p. 364, (1753).

Mineral Springs (Deam) South Haven (Bailey); Nos. 757 Sagunay, Ind., 9153 South Bend, Ind. 206, 708 Tamarack, [Laporte Co.]; No. 708 seems to be intermediate between *T. arifolium* and *T. sagittatum*

PSAMMOGONUM Nwd., Am. Mid. Nat. III. p. 171, (1914)., *Gonopyrum* Fisch., and Mey ex C. A. Meg. Mem. Acad. St. Petersb. Ser. VI., VI., p. 144, (1840), not *Gonopyros* Raf., Med. Fl. I., p. 155, (1828). **Polygonella** Michx. Fl. Bor. Am. 2, p. 240, (1803), segregate.

Psamnogonum articulatum (Linn.), Nwd., l. c.

Polygonello articulata (Linn.) Meisner, Gen. 2 p. 228, (1836–43) *Gonopyrum articulatum* (Linn.) F. and M.

[Lake Co.] (Hill); Tolleston [Lake Co.] (Hill); Millers (Umbach) (Bastin); [Porter Co.] (Cowles); Dune Park (A. Chase); No. 10233, 10264, 10264A, 720, Mineral Springs, 720A Tamarack [Laporte Co].

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OUR BIRDS IN THE AUTUMN OF 1912.

BY BROTHER ALPHONSUS, C. S. C.

August the 21st is the date from which the records for the season start. The Killdeer was absent 8 days after the 23rd. This species in August, flies about in small flock—probably families—and may occur in certain locality only occasionally. In September there were 10 records of this species; in October, 12; in November none. What was said of the Killdeer in August is substantially true of the species during the rest of its stay in autumn.

The Kingfisher was recorded 3 times in August, 5 times in September, 3 times in October and not once in November. These records indicate that this species is uncommon after August 29th. During autumn the Kingfisher must move from one place to another until it finally disappears altogether.

Records of the House Wren become rare after August 15th. In August there were 4; in September 1; in October 1. The scarcity of observations is due to the fact that the species usually stays in brush heaps or wood piles in autumn, and unless such places are visited in numbers, the observer may fail to find the Wren.

Like the Wren, the Catbird and Brown Thrasher are partial to certain places in autumn. They stay in thickets which border roadsides, and are very quiet, seldom uttering even a call-note. Sometimes they may be seen in the road feeding. In August there were 2 records for the Catbird; in September, 8. The Brown Thrasher was observed twice in August and the same in September.

For the Flicker in August there were 3 records; in September,

10; in October, 1. After the 10th of September, there were but 3 records, very widely apart. A probable explanation of the great difference between these three records is the following. Before the 10th of September most of this species that were resident here during summer migrated south, while those seen after this date were birds from farther north.

In September the Yellow-billed Cuckoo was recorded 5 times, the greatest difference between any two of the dates being 13 days. No doubt the species was abundant in our locality until the date of its departure on Sept. 25.; and should, therefore, have been seen often during the first half of the month. No satisfactory explanation offers itself for such a long period of absence.

The Bluebird shows no records for August, 3 for September, none for October, 1 for November. In autumn this species is known to gather in considerable flocks, which feed in favorable localities. Should the observer not visit such a place, he may not see a single individual of the species for many weeks. There were 48 days between the last two dates on which the writer saw the Bluebird this autumn.

In the Meadowlark we have a species that disappears in late summer for more than a month. This year the time of migration was from August 2 to Sept. 19—48 days. After its reappearance, the species may be found regularly until its final migration.

After August 16th, the Vesper Sparrow was recorded but once—Sept. 29th. It is difficult to record this species when the song season is over. Being a bird that resorts to outlying fields and pastures, the observer has to go out of his usual way to find the species. I was fortunate to make this one accidental record, for otherwise I should have missed the date of migration by a big margin.

The Mourning Dove was regularly seen in August and in September until the 8th. After this date there were two irregular records for September and none during the rest of the season. In other years I have made fortunate records of this species in October, which, I think, is the month when the Dove finally departs. As the species is not abundant, the observer must find it difficult to record toward the end of its stay in the north.

The Phoebe was recorded 3 times in September and October. These dates are late in September and early in October. Like the Meadowlark this species migrates in summer. This year the

bird disappeared on July 31 and was absent until Sept. 25—56 days. When the last brood is fledged, the families wander about in field and grove, and thus may be wholly absent from certain localitites until they begin to pass south in force.

A number of species were recorded but a few times, indicating that they were migrants passing rapidly to the south. Such were: Crested Flycatcher, Purple Martin, Baltimore Oriole, Chipping Sparrow in September; Sapsucker, Yellow Palm Warbler, Hermit Thrush in October; Bluebird, Bronzed Grackle, Canada Goose, Northern Shrike in November; Song and Tree Sparrows, Yellow Rail in December.

AUGUST.

Crow, 21, 23, 25, 29, 31.
Blue Jay, 21 to 31.
Robin, 21, 22, 23, 25 to 28, 30.
Song Sparrow, 21 to 31.
Bronzed Grackle, 21 to 31.
Killdeer, 21, 22, 23.
Field Sparrow, 23, 24, 26, 30, 31.
Mourning Dove, 21, 23, 24, 27. 30.
Screech Owl, 25.
Kingfisher, 21, 22, 23.
House Wren, 21, 26, 28.
Chimney Swift, 21, 23 to 30.
Warbling Vireo, 21, 23 to 27, 29, 30, 31.
Baltimore Oriole, 21, 24, 25, 27, 31.
Indigo Bird, 21, 23, 24, 25, 30,31.
Catbird, 23, 24.
Kingfisher, 21.
Red-headed Woodpecker, 21 to 31.
Brown Thrasher, 21, 26.
Downy Woodpecker, 21, 25, 27, 29, 30, 31.
White-breasted Nuthatch, 21, 26, 30. 31.
Goldfinch, 21 to 31.
Flicker, 23, 27, 29.
Wood Pewee, 21 to 31.
Yellowlegs, 21, 24, 29.
Bobwhite, 25.
Yellow-billed Cuckoo, 29, 31.
Wilson Warbler, 30.
Cedarbird, 29, 30.

Total number of species seen, 29.

SEPTEMBER.

Crow, 7, 8, 11 to 15, 18, 23, 27, 28, 29.
Blue Jay, 1 to 16, 18 to 25, 27, 28, 29.
Robin, 1, 3, 4 to 11, 13, 14, 19, 20, 22, 23, 24, 28, 29.
Bluebird, 12, 18, 20.
Song Sparrow, 1 to 6, 8, 12, 13, 17, 21 to 30.
Meadowlark, 19, 22, 26, 27, 28, 29.
Bronzed Grackle, 1, 2, 4 to 11, 13 to 16, 18, 20, 22, 25 to 28.
Killdeer, 3, 5, 6, 21 to 25, 27.

Vesper Sparrow, 29.
Mourning Dove, 1, 2, 4, 6, 8, 17, 22.
Cowbird, 6, 10. 15, 18, 20, 22, 25, 26, 27, 29, 30.
Screech Owl, 5, 28.
Kingfisher, 5, 12, 14, 21, 23.
House Wren, 17.
Chimney Swift, 1 to 6, 8 to 12, 15, 18, 19, 20, 22, 24, 25, 28.
Warbling Vireo, 1, 3, 4 to 10, 12.
Baltimore Oriole, 2, 4.-
Indigo Bird, 1 to 8, 21.
Catbird, 4 to 8, 13, 14, 17.
Purple Martin, 3, 4.
Red-headed Woodpecker, 1, 2, 4, 5, 8.
Brown Thrasher, 11, 12.
Whip-poor-will, 19.
Chipping Sparrow, 1, 3.
Downy Woodpecker, 4, 5, 14, 17, 26, 28, 29.
White-breasted Nuthatch, 1, 2, 5, 6, 9, 14, 15, 16, 21, 24, 28.
Goldfinch, 1, 2, 4 to 7, 9, 14, 16, 21, 22, 23, 25, 27 to 30.
Flicker, 1, 3, 4 to 8, 10, 14, 27.
Phoebe, 25, 29, 30.
Wood Pewee, 1 to 4, 8, 9, 13, 16, 17.
Yellowlegs, 5.
Yellow-billed Cuckoo, 1, 14. 16, 21, 24.
Crested Flycatcher, 2.
Red-breasted Nuthatch, 4.
Herring Gull, 11.
Black-throated Green Warbler, 16, 21, 23.
Redstart, 19.
Myrtle Warbler, 30.
White-throated Sparrow, 26, 27, 29.
Golden-crowned Kinglet, 28.
Snowbird, 28, 29.

Total number of species seen, 41.

OCTOBER.

Crow, 1, 7, 10, 12, 15, 16, 19, 21, 22, 23, 25, 26, 28, 30, 31.
Blue Jay, 1 to 13, 15 to 19, 21, 22, 24, 25, 26, 28 to 31.
Bluebird, 1, 14, 16.
Song Sparrow, 1 to 5, 7, 8, 10, 11, 14 to 17, 20, 21, 24, 26, 28, 31.
Robin, 1, 2, 3, 5, 8, 10, 11, 13, 14, 17, 20, 21, 24, 26.
Meadowlark, 2, 5, 6, 7, 14.
Bronzed Grackle, 1 to 6, 8 to 16, 18 to 21.
Towhee, 15, 16, 23.
Field Sparrow, 2, 3, 9, 10, 15.
Cowbird, 1, 2, 3, 10.
Screech Owl, 19.
Kingfisher, 1, 8, 26.
House Wren, 7.
Downy Woodpecker, 1, 2, 5, 6, 7, 12, 16, 17, 25, 27 to 31.
White-breasted Nuthatch, 1, 5 to 14, 16, 21, 22, 23, 26 to 30.
Goldfinch, 1, 2, 7, 11, 12 to 16, 18, 21, 23, 26, 28, 30.
Flicker, 14.
Phoebe, 1, 2, 3.
Chickadee, 15.
Myrtle Warbler, 1, 2, 4, 7, 15, 16, 26.

Golden-crowned Kinglet, 1, 5, 6, 9, 12, 13, 15, 16, 19, 21.
Snowbird, 1, 2, 5 to 8, 10, 12 to 31.
Brown Creeper, 1, 15, 18, 21.
Sapsucker, 2.
White-throated Sparrow, 2 to 5, 7, 8, 9, 11, 12, 14 to 20, 22, 24.
Killdeer, 5, 8 to 11, 17, 18, 20.
Red-winged Blackbird, 2, 31.
Cardinal, 11.
Hell Diver, 9, 15.
Yellow Palm Warbler, 11.
Hermit Thrush, 12.
Sparrow Hawk, 18.
Canada Geese, 23.
Yellowlegs, 24.
Tree Sparrow, 25, 28, 30.
Red-breasted Nuthatch, 25.

Total number of species seen, 36.

NOVEMBER.

Blue Jay, 1, 3, 4, 6 to 12, 14, 15, 16, 18 to 21, 2 5to 30.
Crow, 3, 4, 7, 9, 10, 13, 14, 15, 18, 22, 23, 25, 27, 28, 30.
Song Sparrow, 2, 7, 12, 20, 25.
Bluebird, 7.
Downy Woodpecker, 3, 4, 7 to 12, 14, 15, 17 to 22, 25, 28, 30.
White-breasted Nuthatch, 2, 3, 4, 5, 7, 9, 11 to 16, 19 to 23, 25.
Goldfinch, 3, 4, 7, 8, 9, 15, 16, 18.
Chickadee, 7, 9, 11 to 17, 25, 29.
Snowbird, 1 to 7, 9 to 23, 25, 27, 29.
Tree Sparrow, 1, 2, 5, 7, 8, 11, 12, 13, 15, 17 to 22, 25.
Golden-crowned Kinglet, 2, 3, 4, 7.
Bronzed Grackle, 7.
Screech Owl, 9, 17.
Brown Creeper, 11 to 15, 18 to 22, 24.
Cardinal, 12.
Canada Geese, 17.
Hairy Woodpecker, 21.
Northern Shrike, 25.
Herring Gull, 30.

Total number of species seen, 19.

DECEMBER.

Blue Jay, 1, 3, 4.
Chickadee, 1, 2, 4.
Suowbird, 1, 2, 3, 4, 5.
Crow, 3, 4.
Song Sparrow, 5.
Downy Woodpecker, 4.
White-breasted Nuthatch, 4, 5.
Tree Sparrow, 2, 5.
Brown Creeper, 1, 3.
Yellow Rail, 3.

Total number of species seen, 10.

Total number of species in autumn, 58.

OUR BIRDS IN THE SUMMER OF 1913.

BY BROTHER ALPHONSUS, C. S. C.

In June 1912 there was only one record of the Bluebird against 7 records in the same month in 1913. In July 1912, 12 records were obtained; for this month, in 1913, the number of records was 28. For August, 1912 showed 4 records and 1913, 20 records. As the totals for the three months in each year, 1912, had 17 records and 1913, 55, or more than three times as many records for 1913. In both years the species was most plentiful in July, after the first brood was reared. The great disparity between the records of the two years seems incredible in such a common species, and the writer does not know what can have been the cause of this great difference.

The Meadowlark was recorded in June, 1912, 22 times; in June, 1913, 24 times; in July, 1912, 12 times; in July, 1913, 3 times; in August, 1912, once; in August, 1913, not once. In July, 1912, the writer was staying in St. Joseph Co., until the 17th inst.; he then went to Van Buren Co., Mich., where no records were obtained except one, on Aug. 1. The character of the country where the writer was living in the latter place was hilly and, therefore, not favorable for finding the Meadowlark.

A comparison of the summer months in 1912 and 1913 shows, for the Killdeer, 3 records for June, 1912, and 6 for June, 1913, 8 records for July, 1912, and 2 for July, 1913; one record for Aug., 1912 and 10 for Aug. 1913. Although the writer was living both years in places where water was adjacent, the Killdeer was seldom found. In other summers the species was abundant, especially in July. Perhaps changed conditions on the shores of the lakes in the latter seasons were not favorable for feeding.

The records of the Towhee for June, 1912, were one; for June, 1913, 2; for July, 1912, 6; for July, 1913, one; for August, 1912, 3; for August, 1913, none. Total records for 1912—10; for 1913—3. These records show that this species is very rare in places in two counties of different states.

The few records of the Nighthawk—9 in 1912 and 1 in 1913—show that this species may not be observed at all or very rarely in the summer months out in the country. The three records for July, 1912 were obtained while the writer was visiting the neighbor-

ing city of South Bend, where on cloudy afternoons he saw Nighthawks flying above the buildings. No doubt the species may be seen frequently in any city.

The total records of the Hummingbird for two summers were 9, showing that this species may be placed among those that are very rare. Probably the observer who would frequently visit flower beds would make more records than one who made no special effort to do so. But the average person, and even the careful observer, may not see a Hummingbird except on rare occasions, covering a long period of time.

Like the Nighthawk, the Purple Martin is a species that is an inhabitant mostly of towns and is rarely seen in the country. The records of two summers show 14 for 1912 and 7 for 1913. This species can easily be attracted in the country if there are suitable nesting places for it. Both the song and habits of the Martin are very pleasing to all bird-lovers.

Species that were not seen in June, 1913 were: Yellow Warbler, Redstart, Scarlet Tanager, Bittern, Wood Thrush, Cardinal, Red-shouldered and Sparrow Hawks, Marsh Wrens, Chickadee. Most of these species are locally distributed—in deep woods or their vicinity, and may not be observed elsewhere in June. The Redstart was not found in July either, reappearing on Aug. 29.

The only record of the Blue Jay after July 27, 1913, when the writer left St. Joseph Co., Ind. for Van Buren Co., Mich.—where he stayed until Aug. 23—was on Aug. 11. Even this record would not have been made if he had not taken a long walk some six miles away from Bankson Lake, his summer resort. Other summers this species was present in the oak grove near the lake.

The absence of the Maryland Yellowthroat in the vicinity of Bankson Lake, from July 4 until the writer left the Lake (Aug. 23), was remarkable. In other summers the note of this species was common in marshy places. A very dry season, in 1913, may have had something to do with the scarcity of the Maryland Yellowthroat.

Among some rare species seen this summer were: Acadian Flycatcher, Veery, Cardinal, Grasshopper Sparrow, Dickcissel, Sandhill Crane and Ovenbird. The only record of the Acadian Flycatcher that the writer has ever made was on July 13. The bird was found in deep woods not far from Bankson Lake. The Veery was still in song on July 25, when the bird was found at

the edge of the same woods. Grasshopper Sparrows were also observed for the first time—locally in hilly fields. The only records of the Dickcissel this year were those made in June and July—none last year. The Sandhill Crane was observed for the last two summers—more frequently in 1913. The Ovenbird has been seen but twice by the writer in nine years.

JUNE.

Crow, 1, 4, 7, 10, 12, 13, 17, 18, 23, 27 to 30.
Blue Jay, 1 to 5, 8, 10, 12, 13, 17 to 25.
Robin, 1 to 30.
Bluebird, 3, 9, 11, 13, 23, 27, 29.
Song Sparrow, 1 to 30.
Meadowlark, 1 to 9, 11, 12, 13, 15 to 18, 20 to 24, 26, 27, 29.
Bronzed Grackle, 1 to 27, 29.
Killdeer, 1, 9, 20, 22, 23, 27.
Towhee, 1, 21.
Field Sparrow, 1, 2, 4, 5, 6, 8, 10, 11 to 14, 16, 17, 20 to 25, 28, 30.
Vesper Sparrow, 1 to 7, 9 to 13, 16, 17, 20 to 24, 27 to 30.
Red-winged Blackbird, 1 to 10, 14, 16, 17, 18, 20, 23, 27 to 30.
Mourning Dove, 1 to 7, 9 to 13, 18, 21, 22, 23, 27, 28, 29.
Cowbird, 1 to 7, 9 to 25, 27.
Kingfisher, 1, 11, 12, 21, 27to 30.
House Wren, 1 to 12, 14, 15, 17 to 23, 25, 26.
Chimney Swift, 1 to 13, 15 to 18, 21, 22, 23, 26, 29.
Warbling Vireo, 1 to 30.
Baltimore Oriole, 1 to 30.
Indigo Bird, 1 to 11, 14 to 18, 21, 23 to 30.
Catbird, 1 to 27.
Orchard Oriole, 1 to 5, 7 to 26, 28, 29, 30.
Kingbird, 2, 3, 4, 6, 7, 9 to 13, 17, 18, 20, 25, 27 to 30.
Alder Flycatcher, 2 to 6, 18.
Crested Flycatcher, 1 to 7, 10, 11, 13, 14, 16, 18, 21.
Cedarbird, 1, 2, 4, 5, 6, 8, 9, 11, 12, 15, 17, 19 to 22, 26, 27, 28.
Yellow-billed Cuckoo, 1 to 4, 6 to 12, 16, 22, 24, 27, 28.
Black-billed Cuckoo, 1.
Red-headed Woodpecker, 1 to 13, 16 to 23, 25 to 30.
Spotted Sandpiper, 1, 2, 4, 6, 7, 8, 10, 11, 12, 17, 20, 24, 25.
Brown Thrasher, 1 to 4, 6 to 13, 16, 17, 18, 20 to 23, 25, 30.
Chipping Sparrow, 1, 2, 4, 5, 6, 7, 9 to 13, 15, 17, 18, 20 to 23, 26, 27 to 30.
Goldfinch, 1 to 5, 7 to 13, 16, 17, 18, 19 to 25, 28.
Flicker, 1 to 13, 16, 17, 18, 20 to 30.
Red-eyed Vireo, 1, 2.
Phoebe, 1, 5, 6, 8, 20, 27 to 30.
Barn Swallow, 3, 4, 6, 22, 27, 28, 29.
Downy Woodpecker, 10, 14, 20, 23, 24, 25, 27 to 30.
Loggerhead Shrike, 1, 9.

Maryland Yellowthroat, 3, 4, 14, 18, 20, 21, 23.
Carolina Wren, 1, 6, 11, 20.
Purple Martin, 1.
Bobwhite, 7.
White-breasted Nuthatch, 19, 20, 23, 27 to 30.
Dickcissell, 28, 30.
Loon, 30.
Bittern, 30.
Wood Pewee, 1 to 30.
Screech Owl, 27.
Bobolink, 27.
Yellow-throated Vireo, 18, 27,28
Whip-poor-Will, 28, 29.
Nighthawk, 7.

Total number of species seen, 53.

JULY.

Crow, 1 to 13, 15 to 31.
Robin, 1 to 31.
Bluebird, 1 to 11, 13 to 23, 25, 26, 28 to 31.
Song Sparrow, 1 to 31.
Meadowlark, 5, 7, 15.
Bronzed Grackle, 2, 3, 7, 10, 13.
Killdeer, 28, 29..
Towhee, 6.
Field Sparrow, 1 to 4, 6, 7, 9 to 11, 13 to 26, 28, 30, 31.
Vesper Sparrow, 1 to 8, 10, 11, 13 to 22, 29, 30.
Red-winged Blackbird, 1 to 23, 25, 28, 30.
Mourning Dove, 15, 19, 21, 25, 28, 29.
Kingfisher, 1 to 6, 8, 9, 10, 12, 13, 15 to 19, 21, 23 to 26, 28, 29.
House Wren, 15.
Chimney Swift, 8, 21.
Yellow Warbler, 4, 6, 7, 15, 16, 18, 25, 27, 28, 31.
Warbling Vireo, 1 to 31.
Baltimore Oriole, 1 to 6, 8, 9, 15, 17, 18, 20, 21 to 29, 31.
Catbird, 1, 2, 4, 5, 6, 7, 10 ,11 13, 15, 16, 18, 20 to 25, 27, 28.
Kingbird, 1 to 31.
Orchard Oriole, 1, 2, 8, 10, 11, 15, 20, 21, 22,
White-breasted Nuthatch, 1 to 12, 14 to 31.
Scarlet Tanager, 2, 3, 13, 15, 17, 18, 22, 23.
Alder Flycatcher, 7, 10,11,18,20.
Crested Flpcatcher, 7, 8, 25.
Cedarbird, 1, 3, 4, 5, 7, 11, 13, 16, 17, 20, 23, 24.
Yellow-billed Cuckoo, 1 to 5, 7, 13, 17, 18, 21, 23.
Whip-poor-will, 1, 5, 7, 14, 20, 22, 28.
Red-headed Woodpecker, 1 to 31
Spotted Sandpiper, 3, 4, 11, 12, 13, 17, 19, 20, 21, 23, 27 to 31.
Brown Thrasher, 15, 18.
Chipping Sparrow, 1 to 31.
Goldfinch, 1, 6 to 12, 18, 19, 21 to 31.
Flicker, 1 to 24, 27, 29, 30.
Yellow-throated Vireo, 3, 7, 23.
Red-eyed Viroe, 13, 15, 18, 22, 23, 25, 31.
Phoebe, 1 to 17, 21, 22, 26 to 29.
Bobolink, 15.
Downy Woodpecker, 2, 5, 7, 9, 10, 12, 15, 17, 21, 22, 23, 25,28.

Barn Swallow, 1 to 31.
Maryland Yellowthroat, 2, 3, 4.
Loon, 5, 21, 23, 24.
Dickcissel, 1, 2, 3.
Tree Swallow, 1, 2, 3, 6, 7, 8, 27.
Greater Yellowlegs, 1, 3, 18, 21, 23, 24, 26, 29, 30, 31.
Purple Martin, 2, 3, 4, 5, 7, 8, 9, 15, 18, 21, 23.
Chickadee, 3, 6, 7, 13, 16, 18, 21, 22, 30.
Hairy Woodpecker, 4, 5.
Grasshopper Sparrow, 5, 6, 7.
Bobwhite, 7, 15, 18.
Acadian Flycatcher, 13.
Blue Gray Gnatcatcher, 13, 18.
Hell Diver, 21, 23, 24.
Cardinal, 22.
Veery, 25.
Screech Owl, 27.
Red-shouldered Hawk, 27.
Sandhill Crane, 2, 3, 8, 19, 23, 27, 31.
Indigo Bird, 3, 7, 10, 11, 13, 15 to 18, 20 to 25, 27, 28.
Cowbird, 3, 12, 15.

Total number of species seen, 60.

AUGUST.

Crow, 1 to 23, 25, 28, 31.
Blue Jay, 11, 24 to 31.
Robin, 1 to 21, 24 to 31.
Bluebird, 1 to 4, 6 to 15, 18 to 20, 22, 28, 31.
Song Sparrow, 1 to 31.
Bronzed Grackle, 9, 24 to 31.
Killdeer, 4, 11, 12, 13, 21, 23, 26, 27, 30, 31.
Towhee, 11.
Field Sparrow, 1 to 7, 10 to 13, 15, 18, 19, 20, 22, 23, 25, 28, 29, 31.
Vesper Sparrow, 4, 5, 9, 10, 12.
Red-winged Blackbird, 4, 11, 16, 22.
Mourning Dove, 24 to 30.
Cowbird, 26 to 30.
Kingfisher, 1, 4, 6, 8, 12, 13, 15, 17, 18, 22, 25.
House Wren, 24, 25, 29.
Chimney Swift, 25 to 31.
Yellow Warbler, 2.
Warbling Vireo, 1 to 31.
Baltimore Oriole, 2 to 28, 31.
Indigo Bird, 1 to 9, 13, 15, 19, 23, 28.
Catbird, 3, 7, 9, 11, 13, 19, 21 to 25, 27, 28, 31.
Kingbird, 2 to 21, 23, 25 to 30.
White-breasted Nuthatch, 1 to 9, 11 to 17, 19 to 21, 23, 25, 27, 30, 31.
Scarlet Tanager, 7, 23.
Alder Flycatcher, 13.
Crested Flycatcher, 27, 29.
Cedarbird, 3, 4, 7, 13, 15, 20, 21, 28 to 31.
Yellow-billed Cuckoo, 5, 7, 8, 10, 12 to 16, 19 to 21, 24, 25, 27, 28, 29.
Whip-poor-will, 14.
Red-headed Woodpecker, 1 to 4,
Spotted Sandpiper, 1, 2, 4, 6, 7, 8, 12 to 15, 18 to 23.
Brown Thrasher, 25 to 31.
Chipping Sparrow, 1 to 5, 7, 8, 9, 11 to 31.

6 to 13, 15 to 19, 21 to 31.
Goldfinch, 1 to 31.
Flicker, 1 to 5, 10, 16, 18, 19, 20, 22, 24 to 31.
Red-eyed Vireo, 1, 17, 23.
Phoebe, 2, 5, 8, 14, 15, 23.
Barn Swallow, 1 to 9, 11, 12, 15, 17, 18, 20 to 23, 27, 30.
Downy Woodpecker, 2, 4, 7, 11, 12, 13, 17, 19, 21, 22, 23, 25, 28, 30.
Loon, 4, 15.
Greater Yellowlegs, 1 to 4, 6 to 10, 12, 13, 16, 17, 19, 20, 22,30.
Purple Martin, 3, 7, 8, 9, 12, 24.
Chickadee, 3, 6, 7, 9, 13, 14, 15, 18, 20.
Grasshopper Sparrow, 1, 3, 4.
Blue Gray Gnatcatcher, 15, 17, 18 to 22.
Hell Diver, 6, 7.
Screech Owl, 14, 27, 28.
Red-shouldered Hawk, 2, 9, 12, 15, 16, 18, 20, 21.
Wood Pewee, 1 to 31.
Hummingbird, 7, 21, 27.
Sandhill Crane, 1, 9, 11, 14, 19, 21.
Least Flycatcher, 25, 29.
Lesser Yellowlegs, 26.
Sparrow Hawk, 26.
Long-billed Marsh Wren, 27.
Ovenbird, 28.
Redstart, 29, 30.
Black and White Warbler, 29.
Black-throated Green Warbler, 30.
Bay-breasted Warlber, 30.
Hermit Thrush, 30, 31,

Total number of species seen, 61.

Total number of species seen during summer, 77.

CRITICAL NOTES ON NEW AND OLD GENERA OF PLANTS.—II.

Proposed Thalictrum Segregates

BY J. A. NIEUWLAND

In some of our manuals of botany *Syndesmon* and *Thalictrum* are by position kept so far apart that it seems as if it were intended to destroy their obviously close relationship. Michaux[1] reduced the Rue Anemone to *Thalictrum*, following Linnaeus' idea that habit was scarcely a character for generic distinction. There are, however, groups now aggregated under the name *Thalictrum* that are more different from one another than any separate one is from the long and universally recognized *Syn-*

1. *Thalictrum anemonoides* Michx. Fl. Bor. Am., I, p. 322 (1803).

desmon. *Thalictrum clavatum* has already been recognized as sufficiently distinct from *T. foetidum* typical of the genus as to have been segregated under the name *Physocarpum*.[2] There was, however, an older *Physocarpon* Necker, (1790). To replace *Physocarpum* Bercht. and Presl. I suggest **Sumnera**, in honor of Dr. George Sumner, an early American botanist, who wrote one of our first works on physiological botany.

Dr. Greene has already emphasized the great difference between our polygamous and dioicous American Rues and the real typical Rues, of which we have, in the limits of Britton's *Illustrated Flora* only *T. alpinum* a plant with perfect flowers and racemose inflorescence. He has suggested that the allies of *T. canadense* (*i. e., T. Cornuti* or *T. polyamum* Muhl.) constitute "at least subgenerically as *Leucocoma*"[3] a group apart. Either of the above mentioned sections were a more distinctly good genus apart from *Thalictrum* than *Syndesmon*, and they would seemingly deserve recognition as genera. Following is a resumé of synonymy of some of our American plants:

Sumnera Nwd., Nom. nov.

Physocarpum, Bercht., and Presl. l. c. (1823), not *Physocarpon* Necker, Elem., II, p. 164, (1790).

Sumnera clavata (DC.) Nwd. *Physocarpum clavatum* Bercht and Presl, l. c. *Thalictrum clavatum* DC. Syst. I, p. 171 (1818).

Leucocoma (Greene) Nwd. Nov. gen., [Subgenus or section *Leucocoma* Greene, l. c.]

Plantae aestate florentes dioicae (vel polygamae?), fructibus sessilibus, ovato-oblongis, longitudinaliter striatis, vel nervatis foliis exstipellatis compositis vel decompositis in utroque sexu diversis, floribus paniculatis, petalis nullis, sepalis 4-5, staminibus multis exsertis, aliquando clavatis. Typus. *Thalictrum canadense* Miller. (*T. polygamum* Muhl.).

Leucocoma canadensis (Miller) Nwd.

Thalictrum canadense Miller, Gard. Dict., Ed. 8, (1768), *Thalictrum polygamum* Muhl., Cat., 54 (1813), *Thalictrum Cornuti* T. and G., Fl. N. A. I., p. 38 (1838).

2. Bercht. and Presl, Rostl. i. Ranunc., p. 14 (1823).
3. Greene, E. L., Leaflets, II, p. 55, et praec., 89 et seq. (1910).

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